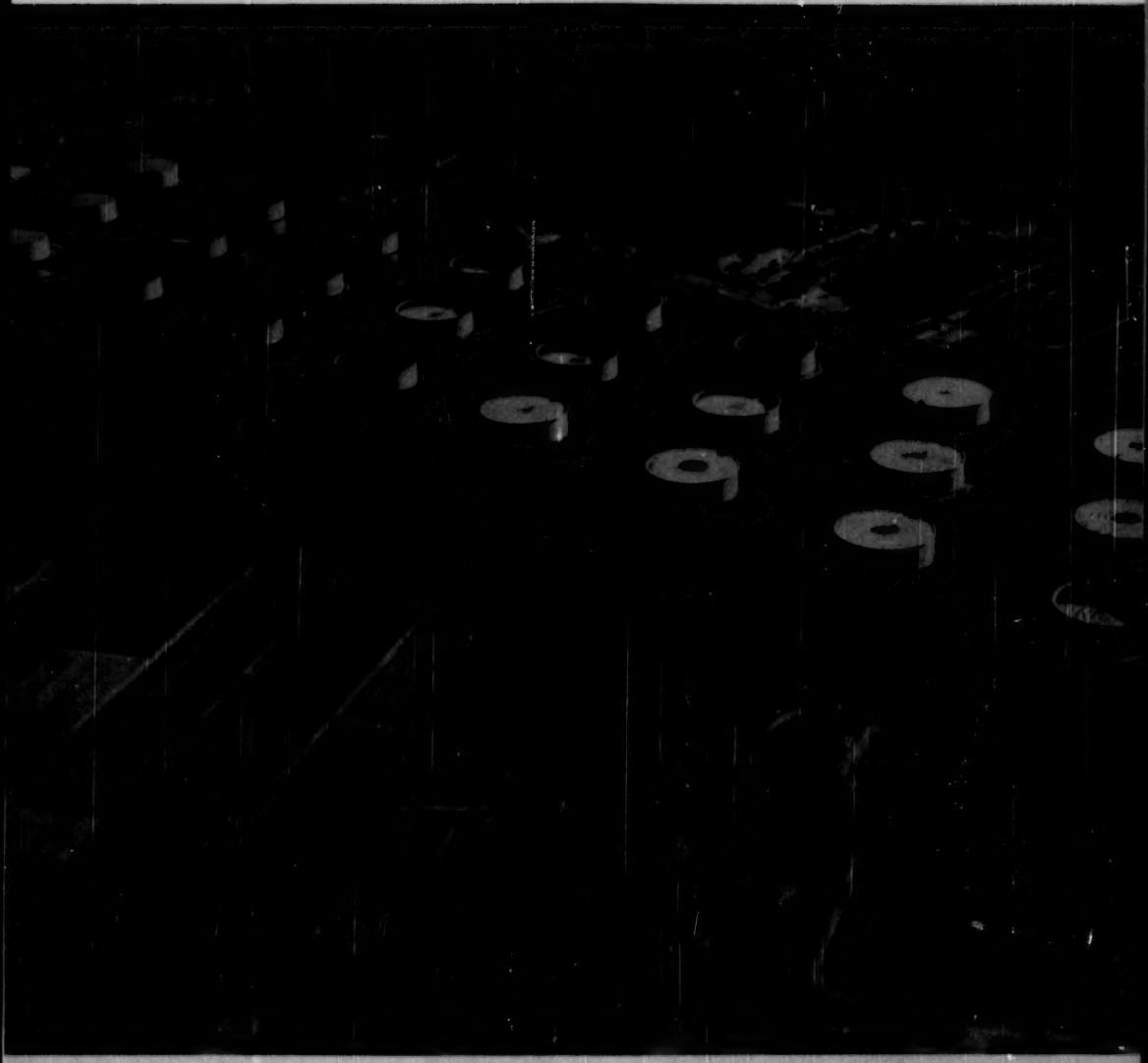
Standardization

News Magazine of the American Standards Association, Incorporated



Petroleum Companies Lick a Problem (see page 256)

OCTOBER 1950

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Company Members—More than 1900 companies hold membership either directly or by group arrangement through their respective trade associations.

Marginal Notes

Standards for the Conservative

It is easy to recognize the advantages of standardization in a mass production industry such as automobile manufacturing, but eyebrows may be raised at the thought of applying standard methods in a personal service business such as banking. Be this as it may, standardization is being proposed as a means of cutting costs in this old and traditionally conservative business. It is not so easy to change long established methods and to install new equipment and processes in the place of time-tested old ones—despite promises of time saved and economies to be made.

On page 249, National City Bank's vice-president F. A. Zara describes how he believes banks could take advantage of today's mechanized processes by applying standardization methods. The suggestion has been the subject of pro and con discussion by banking groups and in subcommittees of ASA's Sectional Committee on Office Standards. The differences in viewpoint still have not been reconciled.

Cashing in on Standards

"Buck" Weaver, manager of purchases, Union Oil Company of California (page 256), combines the viewpoints of the petroleum industry and the purchasing agent. The petroleum industry has had long experience in cashing in on the use of standards. In their national association, purchasing agents now have organized a Committee on Standardization, recognizing their use of standards as a guide in selecting equipment and materials that will give the best service. Mr Weaver's article cites specific experiences in telling why both petroleum executives and purchasing agents are backing the use of standards.

"Without standards, no purchasing agent could function efficiently. Each

simple purchase would require sketches, blueprints, and pages of specifications. Endless controversy over shipments of goods would be the order of the day."

This is the theme of *Standards: A Procurement Tool*, which the National Association of Purchasing Agents' Committee on Standardization and its Committee on Education have joined in preparing. Under "Buck" Weaver's chairmanship, the Committee on Standardization has made a flying start in its job of representing the interests of the purchasing agents in standardization on the national level.

Standards, like Tools, Must be Kept Sharp.

One of the cartoons that make the National Association of Purchasing Agents, *Standards: A Procurement Tool*" a bright departure from the usual presentation of technical information.

Our Front Cover

The West Coast petroleum industry has successfully used standardization techniques to the point of substantially slashing manufacturing cost of much of their specialized equipment. By agreement, everyone's pet idea of what a delivery truck gasoline funnel should look like became consolidated into an "off-the-shelf" item with the new price of $9 instead of $20. That was a small item. Standardization of big items, underground storage tanks, is saving petroleum producers millions. See page 256 for the petroleum standardization story. ***Cover photo by the Union Oil Company of California.***

Opinions expressed by authors in STANDARDIZATION *are not necessarily those of the American Standards Association.*

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In This Issue

Featured—

Roadblock to Economy. *By F. A. Zara*..... 249

New Law Strengthens the National Bureau of Standards..... 252

The British Engineering Standards Co-ordinating Committee.... 253

National Standardization Conference 255

Petroleum Companies Lick a Problem. *By E. H. Weaver*..... 256

From Swedish Bathtubs to International Standardization—Report on World Trade Fair..... 258

German Consul in New York City Lauds Standardization Techniques 259

Why Standardize Thicknesses of Thin Flat Metal. *By I. V. Williams* 260

Solving the Solvent Problem. *By Dr Robert A. Kehoe*..... 262

Model Code Is Guide to Industrial Safety. *By Cyril Ainsworth*. 265

News—

Standards From Other Countries..... 268

Symbols for the Chemical and Petroleum Industries..... 270

Book Reviews 270

News Briefs 274

ASA Standards Activities—

American Standards—Status as of September 8, 1950..... 271

What's New on American Standard Projects..... 273

ASA

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Roadblock to Economy – –

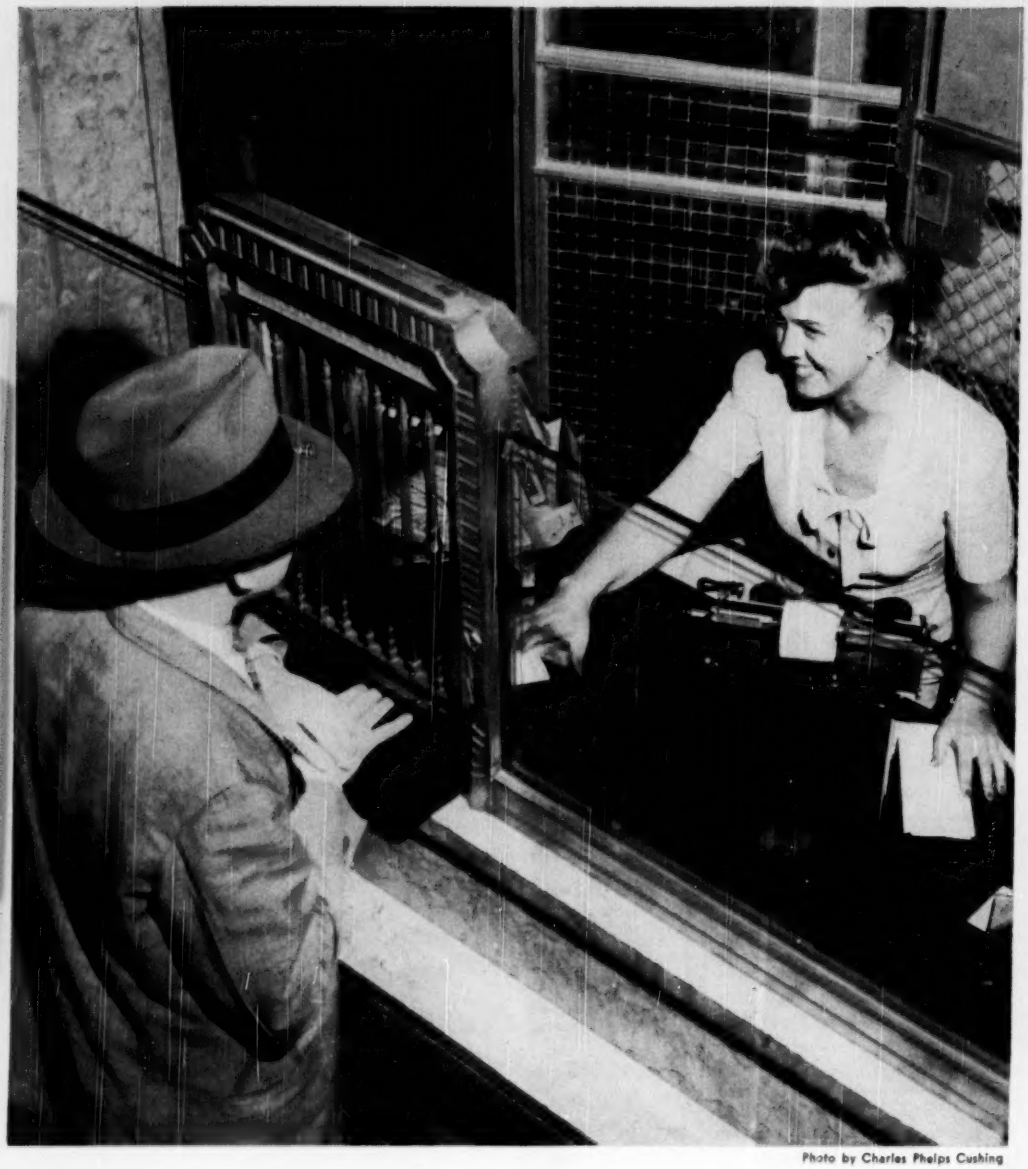


Photo by Charles Phelps Cushing

Checks handled annually in banks throughout the country count up to as much as one trillion, two hundred billion dollars, and estimates indicate they might reach as far as five times the distance between the Earth and the Moon.

The Eccentric Check

by F. A. Zara

WHILE no compilations of figures are available, it has been conservatively estimated that the present number of checks issued in the United States every year is in excess of 10 billion. That is an astronomical figure. It is so large that visualization is difficult. For those statistically inclined, these checks, if placed upon the scales, would probably weigh 33 million pounds. If that conveys little, then consider placing these "orders to pay" end-to-end, and they would form a ribbon of paper which would stretch five times between the Earth and the Moon. As a supplementary "currency" and as a medium of exchange, their use and volume has been phenomenal. In dollars, this veritable snowstorm of checks is estimated about one trillion, two hundred billion annually. They are handled and re-handled and processed through the various financial collection agencies and finally come to rest in the bank-bookkeeping departments throughout the country—except for the comparatively minute number which flutter back unpaid to their makers.

The evolution of the form of check has been rapid, too. Originally it was a dignified legal instrument of more or less standard design, and limited in its context or composition to a simple written order directing a bank or banker to pay a specific sum of money.

A customer opening an account became his own "draftsman." His "systems man" had his own ideas. The active and eager professional systems people, industrial engineers, and office appliance machine salesmen developed new ideas, forms, methods, and ways for handling the accounting problems surrounding the issuance of checks, and the machine manufacturers followed suit. The bank's new business departments were so pleased to acquire new accounts and attractive balances that they were quite content to accept anything the customer wanted in the form of a check. When a suggestion for change was offered by a methodically minded bank official, he had to face the threat that, "If you don't like the kind of checks we use there are other banks that will be delighted to give us what we want." How often have we heard that comment!

Re-handling Needed

Those of us who have given some thought during the past several years to the mounting volume of check clearances in this country, and have observed the countless forms of irregular check design, are concerned about the many re-handlings on manually operated machines which their processing requires.

It is increasingly clear that some new approach is in order if banks are to obtain the greatest benefits from the latest technological advances. A bank first receiving checks for deposit, payable either at its own office or that of another bank, might, for example, provide the means for subsequent handling and bookkeeping through an initial and simple listing. Such a procedure could render unnecessary the many repetitive handlings and manual processings through which these checks now pass. This listing might provide coded tapes, or a special face endorsement on the check itself which would serve as the means for scanning and the automatic actuation of mechanisms. Moreover, these by-products might open the door to a new concept of customers' account rendition, and result in the elimination of mailing and forwarding of the instruments themselves, such as is the Continental and International custom. This in turn could result in curtailment and material lessening in the accounting and labor and other costs now expended by corporations, particularly as applied to the periodic reconciliation and proof of outstanding checks and balances.

There is a condition precedent to those possibilities, however — there must be a greater degree of standardization in the instrument itself. Checks must be standard in size and texture and conform to a uniform arrangement of the material. It would be quite impractical, if not impossible, to attain the full degree of successful application of such a system unless the media or source document lent itself to precision machine feeding and registration. From any engineering viewpoint, this seems to be essential.

Publicity Medium

Today the check is not more, but discouragingly less, standard in form, size, shape, and composition than ever before. I say "discouragingly" because instead of being an instrument of exchange—simple, easy to read, and easy to handle—it has become a medium for the publicity man to sell his wares, and for the copywriters, inventors, and systems men the country over to turn into a complicated, cluttered, irregular, and eccentric accounting form. Trade-marks, slogans, reproductions of products sold, street addresses, post office boxes and postal zone numbers, social security and withholding taxes, pensions, voucher data, restrictive clauses as to date and amount—all now crowd into the instrument. They confuse and retard the prompt handling and accurate recording of the essential factors:

As assistant vice-president of the National City Bank of New York, Mr Zara is in a strategic position to see how the efficiency of banking operations can be improved. His suggestions and ideas are his own and do not necessarily represent the viewpoint of the American Standards Association. Comment or discussion on the value and practicability of Mr Zara's proposals will gladly be published by STANDARDIZATION.

"date," "amount," "drawer," "drawee," and "routing symbol." Not content with this confusion, we are further confronted with the re-emergence of the ration-stamp feature for savings, the use of postal card checks, and more recently, public utility bills for checks. Shapes and kinds without end, or in the words of Milton,

"If shape it might be called, that shape hath
None distinguishable in member, joint or limb."

If these negotiable instruments have reached this almost incredible individualistic and eccentric state, the question pressing for answer is: Why has it been permitted, and why hasn't something more effective been done to the end that the generally recognized benefits of standardization may become more universally available?

An Oversold Idea

The answer, it seems to me, is that banks as a whole have paid too little attention to, or have not fully realized the extent of the trend. They have not sensed the possibilities of standardization and the benefits which might accrue to their depositors and to themselves if checks were more standard in size, composition, and substance. Further, we have been overselling the "open an account—have a checkbook" idea, with consequent high turnover in accounts opened and closed. Also, check blanks and checkbooks have become so popular that they are passed out with an amazing informality. In consequence, the necessity to safeguard one's checks has not been stressed. The result has been to look upon them as so much stationery, for possible bridge scores on the 5:41 train, or for any other memorandum purposes.

All this has tended toward the degeneration of the idea that the check form is a legal instrument which should be issued only on protected safety paper, and for the sole use of the depositor to whom issued and by none other. That idea presupposes the imprinting of the customer's name on all checks, a practice which is fast taking hold and which will be of inestimable aid in reducing the tremendous losses incurred each year by the fraudulent use of checks. Great progress in this direction is noted from coast to coast. With it, hand in hand, will come the possibility for application of technological aids.

Faster Process Possible

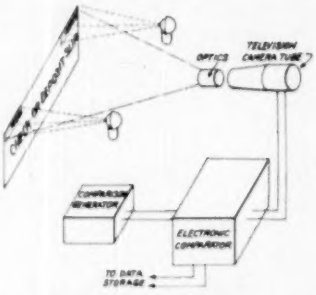
With the imprinting of the depositor's name, a simultaneous imprinting of account number of predetermined classification and in a uniformly located and reserved position will be possible. Such identification will be either in code or numeric-alphabetic symbolization and will permit the listing, handling, and the account rendition by a more fully automatic and faster process than is now possible with manually operated machines. Whether this machine development and the elements used will be electromagnetic or mechanical or a combination of both, or whether it will come about by the use of magnetic tape instead of punched tape or punched cards, or through photography and microfilm in combination with electronic "storage" or "memory" units, I do not believe anyone at this time really knows. But it is within reach, because the "know-how" is already here.

In speaking of check standardization, it would be remiss not to mention the valuable and worthwhile studies and material which have been given and distributed to the banks throughout the country by the American Bankers Association. Through the Association's Bank Management Commission the so-called "Headache" checks have been dramatized and publicized and, working closely with the Federal Reserve Banks, there have been perfected countrywide numerical routing symbols.

All of this has proven most beneficial and a long step in the right direction. But the "options" as to overall size of these bank checks, and the absence of rigid standards as to composition of material and drafting and weight of paper and its substance, still leave the door open and prevent the more significant steps waiting to be taken by research engineers. I am not suggesting a straight-jacketed instrument to which all must conform. There will always remain ample room for "individuality" in design, type composition, character, color, etc. But it is well known in the engineering field that no true mechanization can be had unless, and at least, the source document itself conforms to certain basic standards and precise measurements.

The condition precedent to this beginning is one over-all-sized bank check. Not a series of sizes—but one over-all size for the use of all individuals and corporations. What the exact size or measurement should be, is secondary. Obviously this uniform check should be smaller than the present "corporate" check sizes, and larger than the "individual" sizes. There is fundamentally no more reason why there should be several sizes in bank checks and drafts than that there should be several sizes of the paper currency in circulation.

(Continued on the next page)



The above is a rough sketch of an electronic scanning application which may be utilized in connection with items in transit, as well as in bookkeeping debits and credits to customers' checking accounts. The image of the amount on the check with an identifying account number and check number is focused optically upon a television camera tube which transmits to a similar comparison device a voltage which is characteristic of the amount and which is identified by means of a comparison generator. The data storage machine stores the data either upon photographic film, magnetic tape, punched tape or punched cards.

In evaluating these possibilities, it is, of course, essential that the proposals produce two results. First, it must be demonstrated that the change is generally desirable from an economic or labor-saving viewpoint. That means whether these new electronic devices can be produced and manufactured at reasonable cost. Secondly, it is necessary that this economic advantage be not limited to the banks themselves—large or small—but should also be shared with business and industry. That great and beneficial changes and reduced costs are near at hand and will soon result in a greater simplification and dispatch in the handling of paperwork in all offices is no longer a matter of speculation. The banks ought not to be too far behind in this procession. In fact, the problem of achieving a check that is standard in size, design, and substance for all depositors is susceptible of not too distant solution. It presents a promising field for consideration of educational programs, methods, and techniques of office standardization and deserves the active interest and best thought of all bankers and their customers.

How Standard Checks Might Be Used With Mechanical Devices

From the foregoing, it is obvious that, if uniform papers were used for checks drawn or deposits made, such papers could be used in mechanical devices to permit rapid and accurate totaling at any time. Such mechanical devices might constitute a system comprising a sensing machine which would receive the papers, a data storage machine which would store the information for use at any time, and an accounting computer which would add credits and subtract debits to give a statement.

As an example, suppose each customer were assigned an account number which would appear upon his check. Suppose further that in a place reserved for the purpose, the bank would reproduce the check amount with standard type. Suppose still further that all deposits would result in a deposit slip of the same size as the check with the account number in the same place, and suppose here, too, the bank would reproduce, in uniform type, the deposit amount in a space different from that of the check.

Previously Sorted

In order to simplify an example, assume that the papers would be previously sorted by account number before machine processing. The checks and deposit slips would then be placed in the hopper of the sensing machine. The sensing machine might be devised to operate under a group of well-known principles in which the papers (checks and deposit slips) would be subjected to (1) optical scanning, (2) light scanning, or (3) electrical scanning.

In the electronic scanning application, for example, the image of the uniformly printed amount would be focused optically upon a television camera tube which would transmit to a similar comparison device a voltage characteristic of the amount and identified by means of a comparison generator. This machine would receive the images in a 10-unit comparator circuit, each unit of which would receive from the comparison generator, during the same interval, an input characteristic of one of the digits from 0 to 9. A match would then identify the digit of the amount being scanned and cause the output to be transmitted to the data storage machine to record each digit of the amount.

The data storage machine would store the data either upon photographic film, magnetic tape, punched tape, or punched cards. Information is customarily stored on such media by means of coding. The coding most familiar is that used on punched cards in which the physical location of a hole determines the significance of the information associated with that hole. In a similar manner, a transparent or opaque spot upon a photographic film, a magnetized spot on a magnetic tape, or a hole in a paper tape could be used. Depending on which of the principles would be employed, a photographic film, magnetic tape, paper tape, or series of punched cards would move before a recording head receiving the information from the sensing machine. This recording head, dependent upon the type of storage used, either would expose the film, generate a point of magnetism, or punch a hole. The tape would be divided longitudinally into two areas, one of which would receive debit information and the other credit information. This placing would be automatically effected by the fact that the amount appearing on the check would be in a different place than the amount appearing on the deposit slip. At any time that a statement is desired, the storage record could be run through the accounting computer which would decode the information on the tape, add the credits, subtract the debits, and present a balance. Devices for accomplishing this are in common use in the field of digital computers. For the simplified computation required here, simple reversible electronic decade counters would suffice.

The foregoing has been oversimplified for ease of illustration. Any of the operations, such as prior sorting of account numbers, could be mechanized by putting the entire information covering all account numbers at random on the storage tapes and sorting, during computation, by selection. Thus, the devices could be made as complete (and complicated) or as partial (and simplified) as desired.

• • **A. B. Smith** of Darien, Connecticut, assistant manager of the Engineering Department, National Electrical Manufacturers Association, died August 16 at the age of 55. Mr Smith had taken an active part in electrical standardization work during the past 20 years, and served as the NEMA representative on ASA Committee C1, the National Electrical Code, for a period of years.

He was graduated from Yale University with a Ph B degree in electrical engineering in 1916, subsequently serving three years as an ensign with the U. S. Naval Submarine Service and working with the United Electric and Power Co and the Underwriters' Laboratories, Inc. He joined the NEMA staff in 1930. He was also a member of the AIEE.

New Law Strengthens the National Bureau of Standards

PUBLIC LAW 619, approved July 22nd, 1950, strengthens and establishes authority for the activities of the National Bureau of Standards. The original law that brought the National Bureau of Standards into existence in 1901 was a simple document. The new law broadens and implements it. Under the new law, the authority is vested in the Secretary of Commerce, head of the Department of Commerce of which the NBS is an agency, although the Bureau is not specifically mentioned in the act.

The primary purposes for which the Bureau was established were to provide a basis for accurate measurements in this country and a source of information regarding basic properties of materials determined by such measurements. However, there arose almost immediately occasions for the practical application of these primary services to meet needs of the Government and of industry which were not foreseen, or at least not explicitly mentioned, in the Act. Consequently, within a few years the Congress made specific appropriations for activities which could only be covered by a broad interpretation of the clause, "the solution of problems which arise in connection with standards."

Among such activities, testing of materials and supplies purchased by the Government and the preparation of specifications for such materials early became important parts of the Bureau's duties, although the Act of 1901 contains no reference to such service. During a period of 25 years beginning in 1910 the Congress provided specific funds for many additional lines of work in the Bureau without making the basic statutory authorization more explicit. These special items were repeated from year to year in appropriation acts up to 1935. Since then, annual appropriation acts have specified that the funds provided were intended to cover the functions set forth in detail in the 1935 act. The new law gives explicit legislative authority in place of such reference to an appropriation act based upon interpretations of the Act of 1901.

In accordance with the general policy of giving responsibility to secretaries of departments of the Government, the new act assigns functions to the Secretary of Commerce:

(*a*) The custody, maintenance, and development of the national standards of measurement, and the provision of means and methods for making measurements consistent with those standards, including the comparison of standards used in scientific investigations, engineering, manufacturing, commerce, and educational institutions with the standards adopted or recognized by the Government.

(*b*) The determination of physical constants and properties of materials when such data are of great importance to scientific or manufacturing interest and are not to be obtained of sufficient accuracy elsewhere.

(*c*) The development of methods for testing materials, mechanisms, and structures, and the testing of materials, supplies, and equipment, including items purchased for use of Government departments and independent establishments.

(*d*) Cooperation with other governmental agencies and with private organizations in the establishment of standard practices, incorporated in codes and specifications.

(*e*) Advisory service to Government agencies on scientific and technical problems.

(*f*) Invention and development of devices to serve special needs of the Government.

This general statement of functions of the National Bureau of Standards is supplemented by a specific list of nineteen activities:

(1) the construction of physical standards;
(2) the testing, calibration, and certification of standards and standard measuring apparatus;
(3) the study and improvement of instruments and methods of measurements;
(4) the investigation and testing of railroad track scales, elevator scales, and other scales used in weighing commodities for interstate shipment;
(5) cooperation with the States in securing uniformity in weights and measures laws and methods of inspection;
(6) the preparation and distribution of standard samples such as those used in checking chemical analyses, temperature, color, viscosity, heat of combustion, and other basic properties of materials; also the preparation and sale or other distribution of standard instruments, apparatus and materials for calibration of measuring equipment;
(7) the development of methods of chemical analysis and synthesis of materials, and the investigation of the properties of rare substances;
(8) the study of methods of producing and of measuring high and low temperatures; and the behavior of materials at high and at low temperatures;
(9) the investigation of radiation, radioactive substances, and X-rays, their uses, and means of protection of persons from their harmful effects;
(10) the study of the atomic and molecular structure of the chemical elements, with particular reference to the characteristics of the spectra emitted, the use of spectral observations in determining chemical composition of materials, and the relation of molecular structure to the practical usefulness of materials;
(11) the broadcasting of radio signals of standard frequency;
(12) the investigation of the conditions which affect the transmission of radio waves from their source to a receiver;
(13) the compilation and distribution of information on such transmission of radio waves as a basis for choice of frequencies to be used in radio operations;
(14) the study of new technical processes and methods of fabrication of materials in which the Government has a special interest; also the study of methods of measurement and technical processes used in the manufacture of optical glass and pottery, brick, tile, terra cotta, and other clay products;
(15) the determination of properties of building materials and structural elements, and encouragement of their standardization and most effective use, including investigation of fire-resisting properties of building materials and conditions under which they may be most efficiently used, and the standardization of types of appliances for fire prevention;
(16) metallurgical research, including study of alloy steels and light metal alloys; investigation of foundry practice, casting, rolling, and forging, prevention of corrosion of metals and alloys; behavior of bearing metals; and development of standards for metals and sands;
(17) the operation of a laboratory of applied mathematics;
(18) the prosecution of such research in engineering, mathematics, and the physical sciences as may be necessary to obtain basic data pertinent to the functions specified herein; and
(19) the compilation and publication of general scientific and technical data resulting from the performance of the functions specified herein or from other sources when such data are of importance to scientific or manufacturing interests or to the general public, and are not available elsewhere.

The British Engineering Standards Co-ordinating Committee

Reprinted from the April 1950 issue of The Land Standardization Service News—*British publication of the Ministry of Supply.*

THE Engineering Standards Co-ordinating Committee is an inter-Service body answerable to the Joint War Production Staff of the Ministry of Defence. The easiest way of explaining its function is to quote the Terms of Reference, which are:

(1) To further the application of a common system of engineering standards between the Services, and with industry, with particular reference in the first instance to basic engineering standards and drawing practice; and to co-ordinate the activities of the relevant Ministries in this field.

(2) To further Rationalization and Simplification of the design of new common warlike stores, for the purpose of diminishing the diversity of stores and cost of manufacture.

(3) To reconcile British inter-Service Engineering Standards so far as practicable with equivalent standards in other countries.

(4) To report to the J.W.P.S.

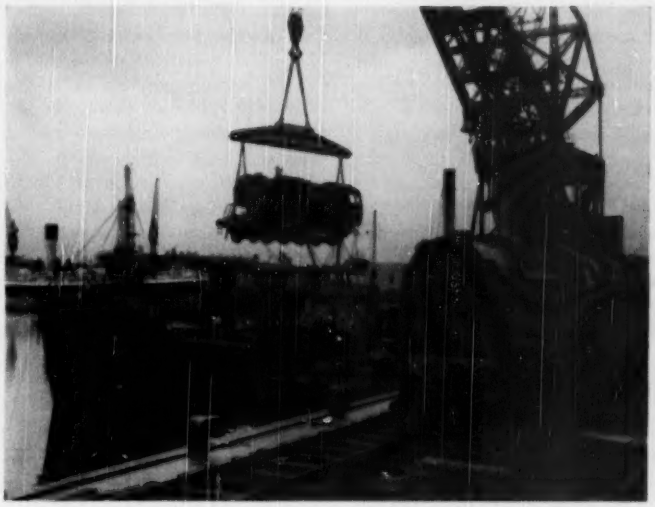
The Constitution is as follows:

Chairman..ACS (M)....
Ministry of Supply
Deputy Controller (Production)
....Admiralty
Assistant Director/Standardization
(Defence).....Ministry of Supply
Assistant Director/Standardization
(Aircraft Equipment)..Ministry of Supply
Director....British Standards Institution.

Representatives of the Commonwealth countries attend meetings as observers.

In parallel with the ESCC are the Joint Warlike Stores Standardization Committee (JWSC) and the Joint Non-Warlike Stores Standardization Committee (JNSC). The three, linked by a common secretariat, form one umbrella covering all aspects of inter-Service standardization.

In 1945 a committee was set up by the Ministry of Production under the chairmanship of Sir William Stanier, to consider and report on the Standardization of Armament Stores. As a result of its recommendations, the Engineering Standards Coordinating Committee was set up as a Ministry of Supply body. In 1948, however, the responsibility for inter-Service standardization was overtaken by the JWPS and from that time the ESCC reported through the JWPS to the Ministry of Defence.



British Information Service

Standardization techniques helped Britain achieve an export target of $65 million worth of vehicles which were shipped out of the country in 1949.

The detailed technical work of the committee in specific fields is dealt with by inter-Service panels, the membership of which is drawn principally from the Inspectorates and Research and Development Establishments. The following is a list of the Panels set up so far:

Ball and Roller Bearings
Rubber Specifications
Surface Finish
Naming Six Electronics Telegraphy Equipments
Ground Generating Sets
Packing Seals
Watches
Primary Batteries
Secondary Batteries
Dimensioning and Tolerancing of Drawings
Drawing Procedure
Metallurgical specifications
A-C Synchros
Lamps
Electric Cables and Wires
Climatic and Durability testing of Electrical Equipment.

An Electrical Advisory Body set up in 1949 advises on electrical matters.

How Inter-Service Standardization is effected

Items likely to be of inter-Service interest are raised by either of the Services for discussion in committee. The next stage is consideration at working level between the three standardization officers and, of course consideration of the proposals within each Service. A typical example concerns the standardization of a-c synchros. The Electrical Advisory Body submitted a proposal that a panel be formed to consider the standardization of magslips, telesyns, etc; this was considered by the ESCC which referred it to the three standardization officers. Their com-

ments on the proposals were considered in committee and it was agreed that a panel be formed. Terms of reference were agreed and formation of the panel is now proceeding.

In another instance the question of standardization of hose and hose fittings was the subject of investigation in the MOS (Defence) and AD/S-(D). Similar investigation in the Admiralty and MOS (Air) revealed a large range of hose sizes and fittings capable of inter-Service rationalization and standardization. After discussion in committee, the matter was referred to the JWSC as being appropriate to them, who proposed to the War Office that their existing ASRC subcommittee on this subject be expanded on an inter-Service basis.

The Assistant Directors/Standardization (Defence) and Standardization of Aircraft Equipment and the Admiralty Standards representative hold weekly meetings where much of the work is co-ordinated prior to formal consideration in committee. It will be seen that close liaison at working level is an established practice.

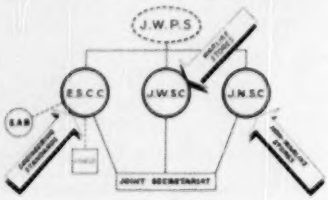
Some Achievements

The tasks undertaken by the ESCC are many and varied and reveal the wide field to be covered in basic engineering standardization. Chief among those tasks which have come to fruition is the agreement with America and Canada on the unification of screw threads. BS1580:1949, which was prepared at the request of the ESCC, provides the technical outcome of the agreement and represents the best compromise found possible by the three countries. The historical background to the agreement began after the 1914-1918 war when the need for common standards in the three countries became apparent. An attempt to reach a common standard in 1926 failed, but subsequent three-country Conferences in 1943, 1944 and 1945 resulted in renewed activity and the signing of the Declaration of Accord in November, 1948.

B.S.308 Part II was the product of the Dimensioning and Tolerancing of Drawings Panel, which also produced the widely distributed "Dimensional Analysis of Engineering Design."

Courses of instruction for Service draftsmen in the methods of dimensioning and tolerancing in accordance with BS308 Part II, are being held at the National Physical Laboratory under the supervision of F. H. Rolt, Superintendent of the Metrology Division, and it is anticipated that a program covering courses for the next six months will be available by the end of March.

The Packing Seals Panel has drawn up a specification which, in accordance with the general policy, was passed to BSI, to be issued subsequently as a draft British Standard CK (MEE) 6080. The recommendations for the design of Helical Compression Springs, published by BSI as draft CK (MEE) 7173, was prepared to meet a requirement initiated by the ESCC.



The British Joint War Production Staff (under the Ministry of Defense) contains the Engineering Standards Co-ordinating Committee, the Joint Warlike Stores Standardization Committee and the Joint Non-Warlike Stores Standardization Committee. The Electrical Advisory Committee works through the Engineering Standards Co-ordinating Committee.

Among the inter-Service specifications produced, that of the Watches Panel has been approved by the committee and, together with the Ball and Roller Bearing specification, will be submitted shortly to Service Departments for endorsement. The Primary Batteries Specification is complete except for some minor considerations, and this will follow a similar course. The Rubber Panel is co-operating with industry to achieve agreement on the revision of BS 1154 and is seeking inter-Service agreement on special rubbers.

The latter case brings out one of the facts of ESCC policy, i.e., to have Service specifications published as national standards by the BSI, and only where this is not practicable, either from a security point of view or for other reasons to retain them as Service specifications.

Members of the ESCC took part in the International Standards Organization conference held in Paris in 1949 and contributed to discussions on screw threads, bolts and nuts, preferred numbers, limits and fits, welding, and ball and roller bearings. One outcome of the conference was that, with the exception of Russia, all member countries using metric threads accepted the unified profile for their future screw thread system.

Evidence was given before the Committee for Standardization of Engineering Products (Lemon Committee) and members of the ESCC were associated with its work. The Committee's report is considered to be a major step forward in the promotion of sound engineering standards in Britain.

The Committee, through the Joint Secretary (Supply), acts in an advisory capacity on Ministry of Supply representation on BSI committees, thus ensuring that the interests of the appropriate Branches and Establishments are covered. By arrangement with the BSI, all draft British Standards of an electrical or engineering nature are forwarded to the Secretary for distribution to the Defence and Air Standardization Branches.

The Future

Some of the problems facing the committee include those of cataloging and numbering and the issue of inter-Service specifications. The latter is on the point of being resolved by a joint ESCC-JWSC-JNSC Committee. The cataloging and numbering question is more difficult but is being actively pursued in other quarters. The outcome of these deliberations will, it is hoped, solve the problem of inter-Service numbering and cataloging. Among the items under discussion at the moment, that of agreement on hexagon sizes for

(*Continued on the next page*)

National Standardization Conference

November 27, 28, 29-1950

The Waldorf-Astoria, New York

Preliminary Program

Monday, November 27

Astor Gallery **10:00 a.m.**

Thirty-second Annual Meeting

Joint meeting of Board of Directors and Standards Council with Company Members of ASA and Guests

OPENING ADDRESS—NATIONAL STANDARDIZATION CONFERENCE. *T. D. Jolly,* (Aluminum Corporation of America) President, American Standards Association

Announcement of Election—ASA officers and 1951 members of Board of Directors

STANDARDS COUNCIL—THE WORKSHOP. *W. C. Wagner* (Philadelphia Electric Company) Chairman, Standards Council of ASA

VOLUNTARY STANDARDS — PUBLIC RELATIONS IN ACTION. *Vice Admiral G. F. Hussey, Jr,* Managing Director, American Standards Association

HOW ASA SERVED INDUSTRY IN 1950. *H. S. Osborne* (American Telephone & Telegraph Company) Vice President, American Standards Association

KEYNOTE ADDRESS—Speaker to be announced

Astor Gallery **2:00 p.m.**

Discussion of practical application of standardization to meet the country's needs in industrial production and military procurement

Tuesday, November 28

Astor Gallery **10:00 a.m.**

Standards: A Procurement Tool

Session sponsored by Committee on Standardization, National Association of Purchasing Agents

Le Perroquet Suite **10:00 a.m.**

Consumer Clinic

MODERATOR—*Herbert O. Bergdahl,* Executive Vice President, Associated Merchandising Corporation, New York

Highlights: What the consumer wants; What is being done on consumer standards; What can be done to guide the nation's housewives in more intelligent buying

Le Perroquet Suite **2:00 p.m.**

Consumer Clinic

Astor Gallery **2:00 p.m.**

Company Member Conference

PRESIDING OFFICER—*E. W. Gardiner* (International Business Machines Corporation, Endicott, N. Y.) Chairman, Company Member Conference

Representatives of Company Members will meet to discuss problems that arise in use of standards, and make suggestions for standardization work to increase the efficiency of their operations

Room 4J-K-L **2:00 p.m.**

Model Laws and Ordinances Committee

Wednesday, November 29

Le Perroquet Suite **10:00 a.m.**

Company Member Conference

Room 4J-K-L **10:00 a.m.**

Committee on Letter Symbols

Astor Gallery **10:00 a.m.**

How Standards Benefit the Construction Industry

PRESIDING OFFICER—*Norman P. Mason* (William P. Proctor Company, North Chelmsford, Mass) Chairman, Construction and Civic Development Department, Chamber of Commerce of U. S.

AS THE ARCHITECT SEES IT. *Lessing W. Williams,* Architect, New York

AS THE MATERIALS PRODUCER SEES IT. *Harry C. Plummer,* Director of Engineering and Research, Structural Clay Products Institute

AS THE CONTRACTOR SEES IT. *E. K. Abberley,* Project Executive and Director, Turner Construction Company

Palm Room **11:00 a.m.**

Conference of Executives of Organization Members of ASA

Starlight Roof **12:30 p.m.**

Annual Meeting Luncheon

GUEST SPEAKER—The Honorable Lowell B. Mason, Federal Trade Commission.

AWARD OF HOWARD COONLEY MEDAL

Room 4J-K-L **2:00 p.m.**

Mechanical Standards Committee

British Standards

(Continued)

bolts and nuts with unified screw threads is receiving priority.

Efforts are being made to obtain unification between the UK Services and industry and the U.S. Services and industry on screw threads below ¼ in. Other current subjects include pipe threads, welding symbols, and protective finishes now being discussed with BSI.

The foregoing is but an outline of the work of the ESCC. The fruits of its endeavors are not, in the main, to be seen immediately; they are, however, of an enduring nature and will reap inestimable profit for the future: i.e. simplification of production processes with resultant economies in manpower and cost; simplification of stores maintenance in the Services and of administration of the supply Services; and the achievement of the maximum interchangeability, between the Armed Forces of the UK and, to some extent, with the Forces of North America, of those stores within the committee's scope.

Cost Accounting

Development of a standardized cost accounting system for possible use by home builders is the objective in a study to be made by the University of Michigan.

The system to be developed will be designed to (1) provide a means for cost control in all stages of the production of houses, (2) discover possible areas of cost reduction, and (3) enable builders to forecast the cost of construction with greater precision.

Petroleum Companies Lick a Problem

by E. H. Weaver

PACIFIC Coast petroleum companies have licked an annoying and costly problem they've faced year after year while building, expanding, and modernizing their thousands of service stations throughout the West.

And the solution was so simple, so obvious, the wonder is it ever was permitted to grow into the extravagant nuisance it became.

Born with the opening of America's first service station around 1910 or so, the problem of underground tanks grew apace with expansion of retail sales along the highways.

Union Oil Co of California

Large valves controlling the flow of oil are designed for specific uses. Ready identification of size, pressure, trim, and manufacturer's name is a "must" for ease in making repairs.

About the only thing everyone agreed on was that every station had to have, in addition to its pump, a storage tank. From that point on there were about as many ideas as to size, shape, plate thickness, and so on as there were companies and company engineers. Each outfit had its own pet theories and specifications. There were a hundred and one ideas of what a tank should be—some varied only a whisper, but still enough to change the specifications and up the cost.

At Union Oil Company, I know, we had our definite specifications and ideas, and we adhered to them regardless of what anyone else thought. After all, we had been one of the real pioneers in retail service station development and had a lot of experience. And so, when we needed new tanks, it was necessary for us to make special commitments with a manufacturer who would meet our special requirements as to size, shape, capacity, thickness as of plate, and other things we put into our specifications. Every other major company was doing the same thing.

So we all got together in 1949 with the West Coast tank manufacturers and took a long overdue step; we adopted standard specifications for underground tanks. Almost overnight the problem of three decades standing was eliminated by this commonsense standardization.

The manufacturers were happy. On the former basis they often had been unable to make quantity steel purchases from the mills; in the new program they are able to buy standard sheets at the lowest price. No longer do we have to tie up funds in excess inventories, handling, and storage charges. For the first time in the history of the petroleum business we can now buy tanks on an "off-the-shelf" basis as we need them.

Standardization is going to save money for everyone.

More recently the West Coast petroleum industry cooperated on a smaller item and slashed its cost nearly in half. Everyone, it seems, who had a gasoline delivery truck also had his pet idea of a delivery funnel. We had our own specifications which cost us $20.00 per unit. The new standardized specifications, agreed to by the industry and the manufacturers, permit funnels to be bought on an "off-the-shelf" basis at a saving of $9.00 per unit

E. H. (Buck) Weaver is not a newcomer in the field of standardization. Throughout the years he has been associated with various standardization projects. He served as chairman of the National Association of Purchasing Agents' Committee on Uniform Markings of Valves and Fittings, a cooperative standardization movement between the NAPA and the valve and fittings industry. During World War II his knowledge and experience of standards was used to good advantage in a dollar-a-year appointment, as Petroleum Consultant in the Conservation Division of the War Production Board, Washington, D. C., from October, 1941 until August, 1942. Mr Weaver has sponsored and carried through to completion several standardization projects in the petroleum industry. During 1948 he was recognized by the Los Angeles Purchasing Agents' Association for outstanding contribution to purchasing with the award of a gold wrist watch.

Mr Weaver has been associated with the Union Oil Company of California for 32 years, having started during 1918 as buyer in the Los Angeles office. In 1922 he was appointed District Purchasing Agent at Seattle; 1937 as Assistant Manager of Purchases at Los Angeles; 1944 to San Francisco as Assistant Manager of Purchases; and since 1945 as Manager of Purchases at Los Angeles.

in the particular case of our company.

Considerable progress in the matter of setting up standards has been made by the various committees of the American Petroleum Institute. This has been particularly so with equipment and practices in drilling and production operations.

Years ago specifications for the large field storage tanks varied with the individual company's engineering ideas or whatever the manufacturer might have developed. Then we set up an API standard on tanks in the various sizes. Nowadays in placing an order for an 80,000 or 120,000 barrel storage tank we merely specify the size of the tank "in accordance with API specifications." It's as simple as that. Every tank builder of any importance knows exactly what we are talking about. Savings all around are obvious.

Those of us in the petroleum industry follow this same practice on quite a number of items such as sucker rods, rotary drilling equipment, rigs and derricks, wire rope, manila cordage, oil well pumps, and many other articles of everyday use.

Some years ago our National Association of Purchasing Agents and the Manufacturers Standardization Society of the Valve and Fittings Industry got together to iron out complaints and confusion. While the project was started initially by the Tulsa Association on oil field valves and fittings, it was soon realized it was a project of all industry, including utilities, waterworks, chemical plants, steel mills, and industries in general.

Confusion in Markings

At the time markings on valves and fittings ranged from well thought out designations by some manufacturers to nothing by others. Valve pressure markings added to the confusion. Some merely showed safe working pressures, others only test pressures. Some showed figures for steam, others for OWG (oil, water, gas). Many valves lacked size markings. Some had figures designating casting number only, others showed year of manufacture. On many no identification of the maker was shown. Entirely missing in some cases were marks indicating alloy used for trim.

All this presented a real problem in replacements due to ambiguity of markings.

It took nine years of hard work before the condition could be rectified through adoption of the standard known today as "Standard Markings Systems for Valves, Fittings, Flanges and Unions." Certain markings were made mandatory, the standard also providing for markings to be cast or stamped. Provision was made for valve trim symbols, alloy designation, temperature designation, size, thread, service and pressures, and the manufacturers' identification. Code symbols were adopted, such as G for gas, L for liquid, O for oil, S for steam, and W for water.

There has been a vast improvement all along the line, with inventories being simplified and untold expenditures saved.

Entirely aside from the dollars and cents standpoint, it is reasonable to claim that the present marking standards provide safer working conditions by avoidance of guesswork in replacing valves and parts in a line operating under dangerous temperatures, pressures, or hazardous fluids.

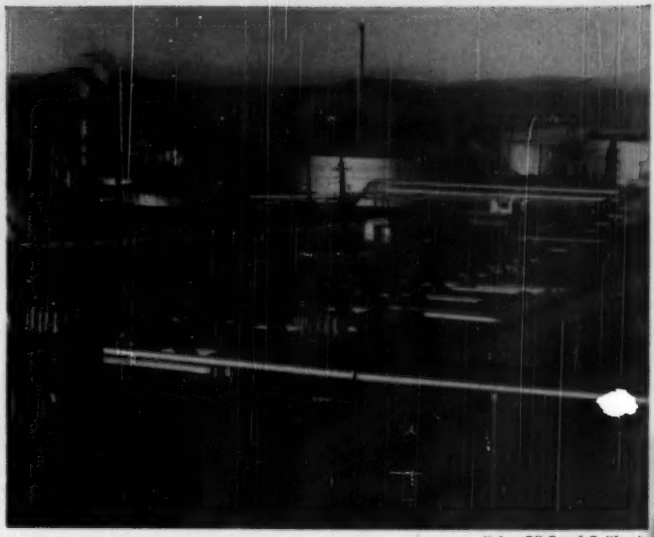
What might be termed "simplification" rather than "standardization" is something else that is of great interest to us in the petroleum industry.

During the 30's, as a result of competition, pipe mills and the petroleum people found themselves with approximately 320 different sizes, weights, and grades in oil well casing. A cooperative survey by mills, field engineers, and purchasing agents revealed that 83 percent of the tonnage sold was in 16 sizes, weights and grades, out of the 320 listed. This meant that 304 units were being manufactured to supply only 17 percent of the market.

This list of 320 was arbitrarily reduced to slightly over 100 by the Conservation and Simplification Group of the War Production Board, acting under emergency pressure.

Carrying the simplification even

(*Continued on page 272*)



Union Oil Co of California

From the large lines that carry oil to and from the tank ships moored at the refinery docks, the pipes range downward to minute ones used in the laboratories or precision manufacturing units, all symbolic of petroleum refining.

From Swedish Bathtubs to International Standardization

Report on World Trade Fair

EVERYONE concerned was astonished at the enthusiasm with which the First United States International Trade Fair (Chicago, August 7-21) was received. The Fair was planned as an opportunity for manufacturers in Marshall Plan countries to meet prospective wholesale and retail buyers and distributors in the United States. It was opened to the general public on four evenings and on Saturdays and Sundays during the two weeks the exhibits were on display.

In addition to thousands of buyers' representatives who came to consider possible contracts during business days, 300,000 men, women, and children thronged to Chicago's Navy Pier and International Amphitheatre on the public evenings and weekends. Judging from the armloads of literature they carried away, a good many hours this winter will be spent in dreaming over furniture, textiles, silver, sporting goods, cooking utensils, household equipment, food, machinery, and vacation opportunities offered by the 47 countries and political units that participated in the Fair. The intense interest shown by the public is credited with having an important effect in piling up orders from U.S. wholesalers and retailers for the products exhibited.

The International Organization for Standardization and the American Standards Association, which had a booth in an advantageous position near the entrance of the Navy Pier, came in for their share of attention. The huge display board in the rear of the ISO-ASA booth brought many of the visitors to a stop; and the question "What Are Standards?" with the answers also displayed prominently and in easy reading position brought many comments, "How interesting! There should be more of that." Copies of ASA's magazine, STANDARDIZATION, and price list, and an ISO document with list of projects and members were distributed. Several of the ISO member countries sent special material for display and these were featured on selected days.

Question Asked

Questions about standards ranged from the general "What standards are there in Europe and how can I find what I want?" to the specific, "What is the most recent American standard for electric motors?" Most frequently asked by the general public was, "Are we going to standardize on the metric system?"

The eight miles of booths on the Navy Pier displayed products of special interest to the general public — sewing machines, perfumes, jewelry, unusual furniture; musical instruments; Colombian coffee; Norwegian and Portuguese sardines; Greek raisins; Japanese, German, and British toys; fine textiles, silver and china; leather goods; and many more.

Even here, standardization was not overlooked. One Swedish manufacturer of bathtubs announced that his manufacturing plant is set up according to modern American principles of mass production and that his product meets National Bureau of Standards' tests.

In the International Amphitheatre, machine tools, building materials, electric motors, optical instruments, printing equipment, automobiles, and chemicals were only a few of the industrial products exhibited. Here, the importance of standards in friendly and easy international exchange of products was given more than a nod of recognition. Standard dimensions for interchangeable parts, standard specifications for materials, standard tests to give reproducible results were generally accepted as an essential part of the exchange of industrial products in international trade. Many exhibitors called attention to the standards they are using as a basis for a common understanding, while at the same time emphasizing those individual features of their products which they believed are needed in this country and for which they hoped to find a market.

Ad Mentions Standards

One Belgian motor manufacturer, for example, advertised his products as conforming to "standards of the National Electrical Manufacturers Association." This was an important point to him, since electric current in Europe operates on a frequency

Oscar, Chicago

The public found it fascinating to window shop at the International Trade Fair. Consumer products and services from all over the world were exhibited in eight miles of booths at Chicago's Navy Pier.

of 50 cycles rather than the 60 cycles used in the United States. His motors are therefore especially produced to meet the standard requirements of the country ordering them.

One Swedish manufacturer of cutting tools explained that he uses American Standards to produce reamers and boring bits in inch sizes for sale to this country, although he is manufacturing a series in the metric system that covers the range of sizes more completely. Since Sweden is a small country and 90 percent industrialized, it is highly standardized, he explained, and its standards are followed closely in order to use its limited resources to the best advantage.

One of the important exhibits at the Amphitheatre was the C. E. Johansson Gage Company's showing of gage blocks and surface finish indicators. The late Mr Johansson is credited with having had an important part in the unification of the American and British inch on the basis of the "industrial inch" which equals 25.4 mm. This ratio was adopted as a national standard in the United States and Great Britain. It had been adopted many years before in practice by Mr Johansson who used the difference of two parts in a million between the "American inch" of 25.40005 mm and the "industrial inch" of 25.4 mm as the tolerance on his most accurate gage blocks. Mr Johansson's son attended the Trade Fair to exhibit his company's products.

Oscar, Chicago

The standardization booth, shared by the International Organization for Standardization and the American Standards Association, attracted favorable attention and many questions about the use of standards

One French manufacturer of grinding machines considered it significant that his machines are checked for geometrical perfection according to French standards. A Swedish manufacturer of milling chucks announced that chucks with 1¼, 1¾, and 2¾ in. cones are manufactured for spindle noses according to ISA (the former International Standards Association), SMS, and American Standard.

The note of optimism and enthusiasm was not completely unanimous. One German manufacturer of motors reported toward the end of the Fair

(*Continued on page 270*)

German Consul in New York City Lauds Standardization Techniques

For a healthy economy Europe should take a lesson from the United States and learn the technique of mass production based on standardization, Dr Heinz L. Krekeler, consul general in New York for the West German Federal Republic, declared in an interview shortly after he took office September 6. He referred to the fact that the characteristics of many consumer items are still determined in Europe by the personal whim of each individual customer. It is unnecessary, he pointed out, to produce 150 different styles of shirts; a few standard items will meet the customers' requirements very adequately. When customers and producers alike accept this idea, the techniques of large scale production can be put into effect. Only then can the cost of products made in Europe be brought down to a level where they can be accepted in the United States and are within reach of the as yet untouched market represented by the lower income population of Europe, Africa, and other parts of the world, Dr Krekeler declared.

No Standard Style

Dr Krekeler made it clear that he is not advocating standardization of style or ideas. "It does not affect the beauty of a house if the sizes of windows and window frames are standard," he said.

Standardization is generally accepted as a boon to technicians but its service to merchants and traders is not so well recognized, he declared. He cited a personal experience as an example of how lack of international agreement on standards can raise trade barriers from country to country. An electric record player bought by one of his party in the United States could not be used in Germany because of the difference in electric voltage and frequencies. Although special adapters could be applied to prevent the machine from

(*Continued on page 272*)

Why Standardize Thicknesses o

by I. V. WILLIAMS

Chairman of the Metals Engineering Group, Bell Telephone Laboratories; Chairman, Sectional Committee on Wire and Sheet Metal Gages, B32

BEFORE considering the methods of standardizing thicknesses of metals, let us first consider why there should be any demand or need for such standards. Some very strong arguments can be advanced in favor of such practice, and the benefits which are derived therefrom should favor producers, warehousemen, and consumers.

First: Fewer items of raw material will have to be handled. For the producer, this will mean that larger runs of the same thickness of metal can be made and fewer setup changes will be necessary. For the warehouseman and consumer, it will mean that larger orders can be placed on mills thereby avoiding extras for small orders.

Second: Fewer items will need to be stocked and raw material records can be simplified to a great extent.

Third: The warehouseman and consumer can obtain a greater flexibility from the stock items, in that one raw material item can be used in making many different parts.

Fourth: Certain benefits will also accrue to the engineer and designer. He will only have one table of raw material sizes to consider instead of referring to a different series of sizes for each raw material under consideration.

Fifth: It will also make it easier to mate parts of different materials, since they will all be available in the same thicknesses.

Sixth: In times of scarcity it will make it possible to substitute one material for another without redesign.

Realizing all these advantages of standardization, the American Standards Association organized a sectional committee (B32) to consider the adoption of a series of preferred thicknesses to cover all thin flat metals. This committee prepared a standard, B32.1, covering Preferred Thicknesses for Thin Flat Metals, Uncoated. This series of preferred thicknesses became American standard in 1941.

In view of the advantages listed for the standardization of thickness of metals, the question naturally arises why this standard has not become more widely accepted in the nine years since its introduction. It appears that there are several factors which have slowed the acceptance of this standard.

The first of these might be called inertia. Various industries have been accustomed to using certain thicknesses of metals, and since it is difficult to put a dollars and cents savings on standardization they are very slow to make any change.

Second, certain gage sizes have become standard in certain industries and these industries can see very little point in changing to a new series of gage sizes. Unfortunately, none of these series of gage sizes is universally used and therefore the consumer who uses a large number of different metals finds that there is no series of sizes which is standard for all industry.

The third drawback to standardization is the work entailed in changing over production of parts

PREFERRED THICKNESSES FOR UNCOATED METALS AND ALLOYS (20 and 40 Series)

....	*0.125*	*0.063*	*0.032*	*0.016*	*0.008*	*0.004*
0.236	0.118	0.060	0.030	0.015	....	....
0.224	*0.112*	*0.056*	*0.028*	*0.014*	*0.007*	....
0.212	0.106	0.053	0.026	0.013	.....	.....
0.200	*0.100*	*0.050*	*0.025*	*0.025*	*0.006*	*0.003*
0.190	0.095	0.048	0.024	....	....	....
0.180	*0.090*	*0.045*	*0.022*	*0.011*	....	....
0.170	0.085	0.042	0.021	....	....	....
0.160	*0.080*	*0.040*	*0.020*	*0.010*	*0.005*	....
0.150	0.075	0.038	0.019	....	....	....
0.140	*0.071*	*0.036*	*0.018*	*0.009*	....	....
0.132	0.067	0.034	0.017	....	....	....

All dimensions are given in inches.
20-series numbers are italic type.

SUPPLEMENTARY PREFERRED THICKNESSES (80 Series)

....	0.125	0.063	0.0315	0.0160	0.008
0.243	0.121	0.062	0.0307	0.0155	0.0078
0.236	0.118	0.060	0.030	0.0150	0.0075
0.230	0.115	0.058	0.029	0.0145	0.0073
0.224	0.112	0.056	0.028	0.014	0.0071
0.218	0.109	0.0545	0.0272	0.0136	0.0069
0.212	0.106	0.053	0.0265	0.0132	0.0067
0.206	0.103	0.0515	0.0257	0.0128	0.0065
0.200	0.100	0.050	0.025	0.0125	0.0063
0.195	0.098	0.049	0.0243	0.0121	0.0062
0.190	0.095	0.0475	0.0236	0.0118	0.006
0.185	0.092	0.046	0.0230	0.0115	0.0058
0.180	0.090	0.045	0.0224	0.0112	0.0056
0.175	0.088	0.044	0.0218	0.0109	0.0054
0.170	0.085	0.0425	0.0212	0.0106	0.0053
0.165	0.082	0.041	0.0206	0.0103	0.0051
0.160	0.080	0.040	0.0200	0.0100	0.0050
0.155	0.078	0.039	0.0195	0.0098	0.0049
0.150	0.075	0.375	0.0190	0.0095	0.0048
0.145	0.073	0.0365	0.0185	0.0092	0.0046
0.140	0.071	0.0355	0.0180	0.009	0.0045
0.136	0.069	0.0345	0.0175	0.0088	0.0044
0.132	0.067	0.0335	0.0170	0.0085	0.0042
0.128	0.065	0.0325	0.0165	0.0082	0.0041

All dimensions are given in inches.
Note: This table is based upon the 80-series of preferred numbers given in American Standard Preferred Numbers (ASA Z17.1-1936).

already in process and the difficulty of obtaining small quantities of materials to the American Standard (ASA) preferred number sizes. To overcome this difficulty, the airframe manufacturers have gotten together with the warehousemen from whom they purchase most of their steel items and have reached an agreement. In the future the warehousemen will stock material to the American Standard (ASA) preferred number sizes. During the interim period, the airframe manufacturers will accept certain Manufacturers' Gage sizes when an American Standard (ASA) size is ordered. When old drawings are used which show Manufacturers' Gage sizes, certain American Standard (ASA) sizes will be acceptable on orders for these parts. One other manufacturer has set up a series of extra-wide tolerances based on "ASA" sizes so that material supplied to American Wire Gage or Manufacturer's Standard Gage can be purchased during this interim period.

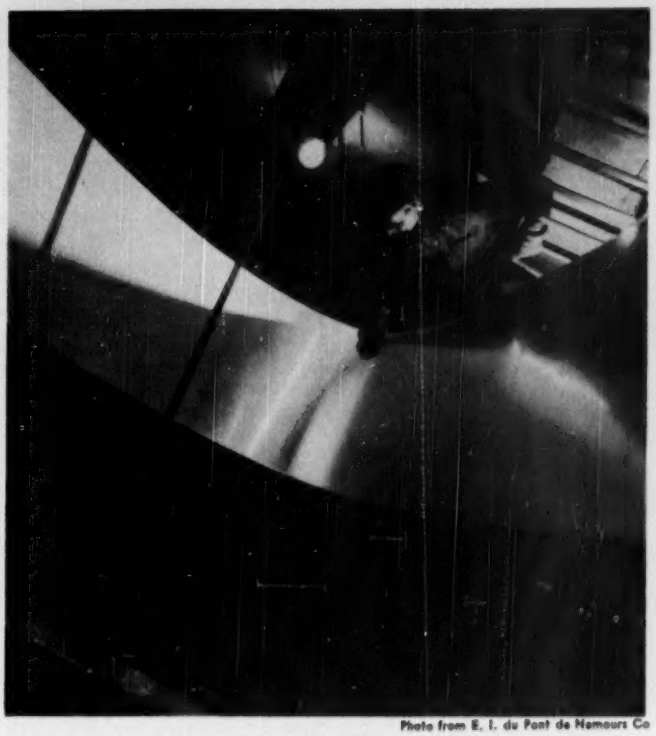


Photo from E. I. du Pont de Nemours Co

"Pay-off" loop feeds the line ahead while a fresh coil of steel is welded to end of strip to maintain continuous operation.

A Stumbling Block

By far the greatest stumbling block to the adoption of these American Standard (ASA) preferred number sizes is the difficulty of getting the three interested groups together to work out a method of expediting the changeover.

The metal producers state in all sincerity that they will supply any thickness of metal which is ordered.

The warehousemen say that sizes of material which they stock reflect the sizes which have been ordered in the past.

This should apparently make it easy for the consumer to switch over to any series of sizes which he might wish to adopt. However, it does not work out this way.

Experience has shown that if a designer uses American Standard (ASA) preferred numbers for raw material on a part which he has designed, the part goes into manufacture first as a rather small running item and the raw material for this part is either drawn from existing stocks in the shop or is ordered from a warehouse. When the warehouse receives the order it reports back that it does not have the material to the "ASA" sizes and the nearest gage size which might be standard for that particular raw material is substituted.

A Different Size

This means that the tool used for the original production will be based on some size other than American Standard (ASA) preferred numbers and any life tests which are made on the apparatus will be made on parts of a different thickness than called for in the original design. The chances are therefore very large that when the product goes into full scale manufacture the raw material used will be some other size than an "ASA" preferred thickness. Of course, if the part is a small runner, the difficulty noted above for preproduction models would apply throughout the manufacturing schedule for the part.

So far, only a few of the very large companies have been able to break through this log jam and they have not been entirely successful since even the largest industries have certain parts which are made in comparatively small numbers or which are subcontracted to other suppliers. It would appear that what is needed is some high level conference of policy-making officials of the three interested groups to provide some method for making this changeover.

The ASA Sectional Committee B32 has recently been reactivated and one of the actions of this committee has been to recommend the expansion of the standard preferred thickness sizes to use the 40 series of numbers rather than the 20 series

(*Continued on page* 272)

Solving the Solvent

by Robert A. Kehoe, M.D.

Kettering Laboratory, Department of Preventive Medicine and Industrial Health, College of Medicine, University of Cincinnati, Cincinnati, Ohio; representative of the American Industrial Hygiene Association on ASA Sectional Committee, Z37, allowable Concentration of Toxic Dusts and Gases

INADEQUACIES in the control of occupational exposure to solvents and other organic chemicals of similar character, and illnesses and fatalaties and claims for compensation for occupational illness and death that arise from failures in such control, are unsolved problems which stem in no small part from inco-ordination of thought, effort, and responsibility on the part of professional personnel in the field of industrial health.

Numbers of such chemicals are listed in state codes of industrial hygiene in terms of maximum allowable concentrations. Many of these standards are backed by little evidence, and yet the tendency to regard them as valid and absolute criteria in relation to industrial safety or hazard is strong and increasing, especially on the part of enthusiastic industrial hygienists in governmental and industrial circles.

Effect Is Good

The effect of this tendency has been good, generally, despite the shortcomings in the standards themselves. In fact, the development, promulgation, and application of such standards is a highly significant contribution to the professional technique of industrial hygiene.

On the other hand, such standards are not complied with in the large proportion of industrial establishments in this country, not so much because they are doubted, as because the mechanisms do not exist commonly, in industry or in state health agencies, for their practical application and their adequate enforcement. Moreover, neither the industrial hygiene engineer, on the one hand, nor the industrial physician, on the other, seems generally to understand what is required to validate or substantiate them, or to put them, after substantiation, into practical and effective use. Thus far we have failed to achieve practical mastery of the ideas and tools of industrial hygiene in relation to this common problem.

This paper was presented at the Thirty-fifth Annual Meeting of the American Association of Industrial Physicians and Surgeons, Chicago, April 26, 1950.

It must be acknowledged, for the sake of a just record, that neither doctors nor industrial hygienists can be blamed for the inept and careless handling of solvents and other dangerous chemicals in small industrial plants and shops and in our homes. Something, however, is sadly lacking in the information disseminated by various means to the small commercial users and the individual consumers of these chemicals.

Let us look at this situation and the means of its solution, as one part of the general problem of industrial health, and also as an illustration, to some considerable degree, of the unsatisfactory qualities of present-day professional performance, and even of some of the unhappy attributes of modern life. Various criteria have been offered, from time to time, for appraising a current level of human civilization. Perhaps, from our somewhat specialized viewpoint, we might hold that man comes to be civilized to the extent that he intensifies his regard for human life. If this criterion be acceptable, then this period of ours may not rate very high in either its attitude or its achievement, since modern industrial production, which is the most striking contribution of our time to human experience, continues to multiply its hazards at a more rapid rate than we find means for their elimination or control.

A Poor Job

If, now, we bring back our original topic into this atmosphere, we shall have to admit, I think, that we and our contemporaries have done a poor job both in obtaining the information that is required for the safe use of many solvents, and in applying that which is available. Moreover, instead of facing this obvious fact and applying the self-criticism that is urgently needed, we tend to develop a smugness and complacency, not to say, a professional pride, in the progress which we hope, at some later time, to make.

A brief description of the steps by which a new solvent or similar chemical can be introduced into safe industrial production and use can best serve to point up the defects in the preventive measures now applied in the case of both new and well known products of this type.

Preliminary Toxicologic Investigation

As an integral part of the technologic research whereby a new chemical is developed, the physiologic and toxicologic properties of the product should be investigated. These properties are just as much a part of the advantageous or disadvantageous potentialities of the material as are its physical and chemical properties. It may well be found by relatively simple tests that certain members of a group of apparently promising materials can be excluded promptly from consideration for certain industrial uses, on the basis of their toxic characteristics. At the same time, the recognition of some peculiar or unanticipated physiological effect by this means may open up other fields of usefulness for an unfamiliar chemical.

Assuming that a given product passes its first toxicologic examination, and that it seems to meet the technologic specifications, the stage is set for a fuller investigation of its physiologic properties in relation to its projected handling, transportation, and use. It is still not recognized generally by industrial organizations and by their medical advisers that the producer of a commodity of this type has a social, if not always a legal, responsibility to provide to handlers and users the toxicological information and the practical instructions that are required for safety in their anticipated use of the product, or in lieu of such information,

the effective warning that will deter them from an uninvestigated and possibly hazardous usage of it. Commercial considerations and intense competition in the chemical industry tend to dilute such responsibilities in a variety of ways, but it is clear that the general application of this principle is a primary necessity for safety in an industrial society. Do not let us delude ourselves in the belief that such safety exists at present, by pointing to what has been done. Our accomplishments in this direction have been notable but quite inadequate to meet the need.

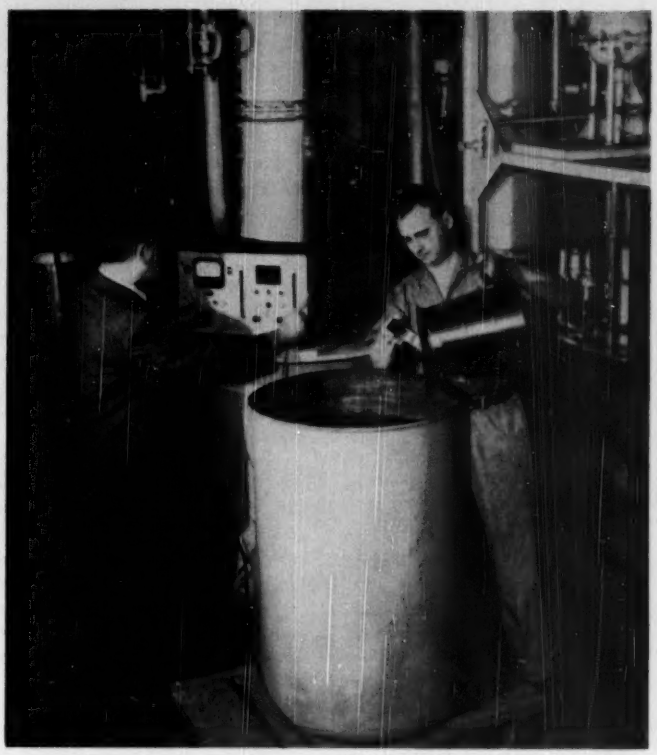
The experimental program required to provide the necessary toxicologic information must either be reasonably comprehensive in the first instance, so as to leave little to chance, or else the investigation of potential physiologic effects must go on step-wise and piecemeal over the period of time required for the exploration and development of the uses to which a product may be put. In general, the former procedure turns out, eventually, to be the least costly.

It must be admitted that the cost of a comprehensive and practical toxicologic investigation is considerable, and that the economic burden thus put upon a new product, in its earliest commercial competition with other available materials, may be sufficient to tip the scales against its successful exploitation.

No Serious Obstacle

Despite this fact, if one or the other of the procedures indicated above were to become the conventional and regular practice of the chemical industry, large and small, it would create no serious obstacle to prudent progress, but would operate only against those commercial developments that create unwarranted risks.

One of the factors which delays progress in this direction is that those who hasten to exploit new products without regard to industrial and public health and safety, whether from ignorance or indifference, tend to s t the pattern on the basis of competitive cost. The result is that little toxicologic information is obtained in advance on materials that must compete rigorously for commercial position. Fragmentary or controversial data, and information buried in confidential files, serve little useful purpose. Rather, it is necessary that adequate and reliable information be obtained and disseminated through conventional channels, for the economic and hygienic good of the community as a whole.



New York State Dept of Labor—*Industrial Bulletin*

An industrial hygiene engineer tests for vapors of the solvent, carbon tetrachloride, in the breathing zone of a worker in a chemical plant. The apparatus picks up "surges" of vapors occurring in such operations as pouring.

Adequate Toxicologic Information

What is adequate information, and how can the adequacy of the information be determined? Here we must give statement to a few simple but far-reaching principles, which are ignored all too frequently by those who should know better, and which are not apprehended at all by many who accept professional responsibilities for the health and safety of industrial workmen.

The preliminary toxicologic investigation of a new chemical, as well as that which later provides the basic information by which the effects of occupational exposure may be anticipated with a reasonable degree of assurance, must be carried out on experimental animals in most instances. By such means, however, one can only determine the *probable* effects which may be sustained by human beings under conditions of occupational exposure. Determination of the toxic effects of a single large dose or of multiple doses of a material over short periods of time has only a very limited value, since it often happens that prolonged exposure to

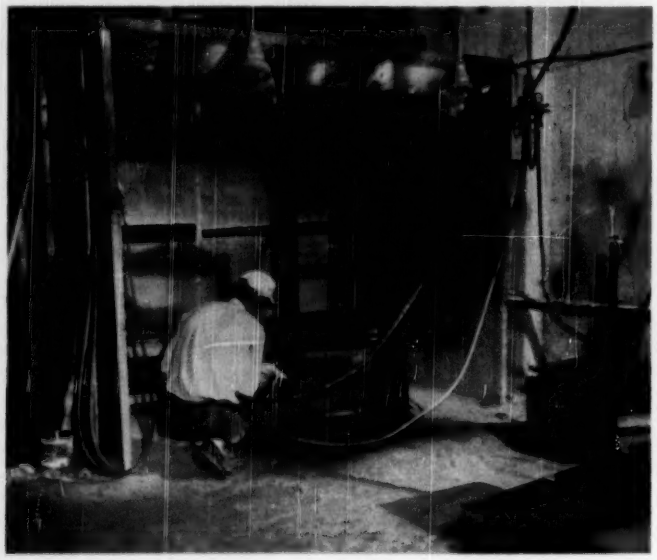
relatively small quantities of a substance induces effects that differ widely, both qualitatively and quantitatively, from those which follow brief periods of more rapid and greater absorption. Experimental conditions, which are tolerated over prolonged periods by several divergent species of animals without giving rise to any toxic effect, point the way to tentative specifications for safe human exposure, and when such specifications are laid down by competent investigators whose judgments are backed up by broad physiological experience, they can be accepted with only that reservation which must always obtain when the experience of human beings is lacking.

Our present conventional procedure, which admittedly constitutes a great advance in practice over that of an earlier period, is to give the specifications for a nonhazardous working environment in terms of the "maximum allowable concentrations" of gases, vapors, and particulate substances in the atmosphere of workrooms.

Anyone who knows anything about industrial plants and materials and the habits and predilections of workmen realizes the fallacy of limiting the scope of toxic industrial hazards to atmospheric contamination, but we are so prone to accept any current conventional pattern of thought and procedure, that some of us find it difficult to think seriously of occupational hazards that do not involve the respiratory avenue of exposure and absorption. This is true despite the well known fact that many of the solvents can cause fatal intoxication when absorbed through the skin, under conditions which involve little or no absorption by any other route.

Need Data on Effects

But to return to the "maximum allowable concentrations," no one of these is acceptable as an established standard for a safe atmospheric environment for a human being until the facts with reference to a representative human population have been established by prolonged, meticulous, clinical observations, correlated with prolonged, precise, and representative determinations of the prevailing concentrations in the atmosphere to which such a population has been exposed.



New York State Dept of Labor—*Industrial Bulletin*

Ventilation in spray painting booth reduces health hazards by protecting painters from inhalation of toxic fast-drying solvents used in spray paints.

In how many instances have these procedures been followed, and where are the data, obtained by industrial physicians, in evidence of the facts? They have not been sought often, and they are not being sought by many of the present breed of industrial physicians. Instead of using the methods which they alone have the opportunity and ability to apply, our industrial physicians ignore these procedures of preventive medicine in favor of treating the victims, or else they search in vain for criteria of safety in the literature of industrial toxicology and clinical medicine, in the apparent belief that such information can be plucked out of the air by some kind of scientific sleight-of-hand.

It is futile and inept on the part of industrial physicians to criticize the inadequacies of the "maximum allowable concentrations", and the efforts and methods of the industrial hygiene engineers, who work carefully and vigorously and sometimes with unwarranted faith in standards which have often been established by laboratory toxicologists without knowledge of industrial conditions and practices and without access to human subjects or industrial employees.

Can Obtain Data

The physician in industry often has the means of obtaining the necessary information merely through the exercise of the knowledge and skill which may properly be expected of the medical specialist in industrial health. He can and should know the means by which hazardous environmental conditions can be recognized and appraised, and certainly he can be expected to gauge the effects of such hazards. He will often need the help of persons of different technical training than his own in studying the nature and severity of the hazard, and also in bringing it into control. To a very considerable extent such persons are available, and if the physician does not call upon them for assistance and collaboration in the solution of these problems, he is failing to make use

(Continued on page 267)

Model Code Is Guide to Industrial Safety

Reviewed by Cyril Ainsworth

FOLLOWING six years of work by a committee of experts with other committees giving nearly the same amount of time and work to special sections, the International Labor Organization has published and distributed *The Model Code of Safety Regulations for Industrial Establishments for the Guidance of Governments and Industry.*

The Code was approved by the Tripartite Technical Conference (industry, labor, and government representatives) held in Geneva in the Autumn of 1948. Certain provisions relating to electrical equipment and toxic substances were also referred by the Governing Body of ILO to committees of experts in these fields which met in the spring of 1949. Since the Tripartite Conference had expressed the desire that provisions on dangerous radiations should be added to the code, this recommendation was likewise referred to a committee of experts.

The Tripartite Technical Conference proposed that the text of the code should be accompanied by an appendix consisting of photographs, drawings, and explanations of safety installations, appliances, and devices. Such an appendix is in the course of preparation and will be issued later as a separate volume.

UNATIONS

Safety engineer cautions a sanding machine worker: "Wear your safety glasses or you'll soon wear an artificial eye . . . just like this one."

The ILO has published the model code with the intention of placing it at the disposal of Governments and industries merely for guidance. It is not an instrument involving any binding obligations. The ILO hopes that Governments and industries will make free use of its recommendations and provisions in framing safety regulations and in planning and conducting safety programs.

The model code is a 483 page book containing technical information and suggested regulations on a great variety of subjects which in the United States have been handled in separate safety codes. The model code, therefore, is not only a code of safety standards. From the United States point of view it is a codification of codes. This gives an idea of the extent of the work. No comparable work has ever been published in this country.

The following subjects are covered in 16 chapters:

1. General Provisions.
   Purpose and scope, definitions, determination of safety factors, obligation of employers, employees, and other persons.
2. Premises of Industrial Establishments.
   Buildings, structures, workplaces, and yards; lighting and general ventilation.
3. Fire Prevention and Protection.
   Building exits, fire fighting facilities, alarm systems and fire drills, storage of explosives and flammable substances, disposal of waste and lighting.
4. Machine Guarding.
   General provisions, prime movers, mechanical power transmission equipment, standard machinery guards, point of operation for many types of machines used in a variety of industries, vats, and tanks.
5. Electrical equipment.
   Installation, grounding, guarding live parts, fire-fighting, static electricity, flammable and explosive atmospheres, etc.
6. Hand Tools and Portable Power-Driver Tools.
7. Boilers and Pressure Vessels.
   Boilers, unfired pressure vessels, compressors, gas cylinders.
8. Furnaces, Kilns and Ovens.
   Blast furnaces, cupolas, steel making furnaces, open-hearth furnaces, heating furnaces, brick and pottery kilns, drying kilns, bakery ovens, core ovens, and mould-drying ovens, enamel, lacquer and paint-baking ovens.
9. Handling and Transportation of Materials.
   Cranes, portable floor hoists and tiering hoists, crabs and winches,

Mr Ainsworth, technical director of the American Standards Association, is a member of the committee which worked out the technical safety requirements for the ILO Model Code. He is well known in the safety field for his early work in industry, in inspection safety code development work in the Pennsylvania Department of Labor and Industry, and in activities of the National Safety Council, the Greater New York Safety Council, and the American Museum of Safety.

conveyors, power trucks and hand trucks, plant railways, piping systems, lifting, carrying, piling and storage of material.

10. Dangerous and Obnoxious Substances.
    Flammable and explosive substances; corrosive, hot, and cold substances; infectious, irritating, and toxic substances.
11. Dangerous Radiations.
    Infrared and ultraviolet radiations, ionizing radiations.
12. Maintenance and Repairs.
    Equipment and tools, safety measures for maintenance and repair work, window cleaning.
13. Health Protection.
    Sanitation, local exhaust systems, personal protective equipment.
14. Selection of workers, Medical Service, Medical Aid.
15. Safety Organization.

Similar to U. S. Practice

The above review of the chapters of the code and their contents reveals the breadth of the scope of the work. Those who may care to review the contents critically will find much similarity between the recommendations and United States practice. American Standard Safety Codes, literature of the National Safety Council, the National Fire Protection Association, technical societies, trade associations, and material developed by Federal and state governmental agencies were available not only to Swen Kjaer, the rappateur who conducted the original studies and prepared the first drafts but to the committee of experts for consultation purposes. Available also was a vast amount of technical material from all countries in the ILO which were in a position to supply it.

Service to World

The ILO has rendered a distinct service to the world at large by making available such a storehouse of information for the use of governments, industries, labor, and technicians in building more effective safety programs. Through the intimate discussions among members of the committee of experts a dissemination of information also took place which cannot help be of great value. The members of the committee of experts were all persons who, in their respective countries, held high and important positions in organizations (government and otherwise) having responsibilities for leadership in accident prevention work. The meetings of the committee, therefore, had the aspect of international conferences for exchange of information. Each member received much in the way of stimulation—new ideas and information which must necessarily have influenced greatly his individual activities in industrial accident prevention work.

Member of ASA Committee

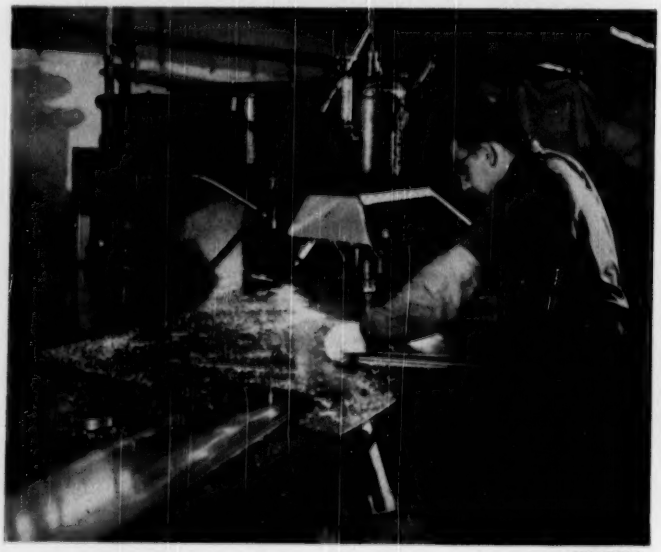
The rappateur of the committee, Swen Kjaer, was for many years a member of the Safety Code Correlating Committee of ASA serving as a representative of the Bureau of Labor Statistics, U.S. Department of Labor. As a labor man and government official he was widely known for his constructive approach to accident prevention problems and the conscientiousness with which he assisted in their solution. Through his consulting service for the ILO and the committee of experts Mr Kjaer has made a valuable contribution to accident prevention the world over.

Important to U. S.

The model code is of special significance to American business and to the safety engineering profession in this country on three major counts.

1. Many business organizations in this country operate units in other countries of the world. The recommendations of the ILO model code will undoubtedly be used as the basis of governmental regulations in countries where such units are located. They may also be used by factory inspectors in connection with the suggestions which they make on the removal of accident hazards.
2. In the United States, the ILO model code may be used by governmental agencies as source material in the formulation of regulations. It will always be available to sectional committees operating under ASA procedure in the development of American Standard Safety Codes.
3. Safety engineers will find the Model Code an excellent encyclopedia of safety engineering information. Seeing how the other fellow does it, in other countries as well as in one's own, is one of the best ways of broadening ones knowledge. The model code tells how the other fellows think collectively about many accident prevention problems.

Copies of the Model Code of Safety Regulations for Industrial Establishments can be obtained in this country from the International Labor Office, 1825 Jefferson Place, N.W., Washington, D. C.



UNATIONS

Shield, gloves, and an air hose that blows away metal chips, protect a router bitt metal cutting machine operator from flying metal shavings.

Solvents

(*Continued from page 264*)

of the conventional procedures of his professional field.

Practical Application of Toxicologic Information in Industrial Hygiene

We come now to the application of the information available whether it is adequate or inadequate. In connection with any industrial operation which requires the use of a solvent, the first procedure is the selection of the right material.

Selection of Solvent

Obviously a choice will be made initially on technologic grounds, but certainly this is not the only basis for intelligent choice in a modern well-managed industrial plant or organization. It is fair to say, on the basis of experience, that practically any solvent can be used with safety under suitable conditions. On the other hand, the precautions required to insure safety vary greatly with the manner and site of the use. It is one thing to control the conditions of use in a localized industrial plant possessed of facilities of various types that can be applied to the problem. It is quite another to establish and supervise the necessary procedures in a large number of small establishments in which a few people work—as for example, in the many units of a military organization. Then too, the difficulties of avoiding exposure to a solvent used in an open operation are enormous as compared to those carried out in a closed system. The latter is not always feasible for obvious reasons.

The choice, once made, determines the nature of the equipment required for the purpose, the convenience of the operation, and the cost incidental to adequate protection of the personnel, and unless these matters are taken into account in advance, it is a blind man's choice. One wonders why this fact does not trickle through into the intellectual processes of more of industry's management, and the only answer that seems to come is that the facts of life with respect to industrial health are not presented to them in simple and forceful terms by their medical advisers.

Protection of Personnel

A program for the protection of exposed personnel must now be developed and put into effect. This may be simple or elaborate, inexpensive or costly, sharply localized or widely distributed, dependent upon the situation. The presumption, at this stage, in an intelligently operated industry, is that the general range of toxicity, the modes of absorption, whether through the skin or through the respiratory tract or through both, and the type of clinical effects to be anticipated, in relation to a chosen material, are known. If skin exposure is to be dealt with, the problems of percutaneous absorption, cutaneous irritation, and cutaneous sensitization must be appreciated and dealt with appropriately. If inhalation is to be guarded against, criteria for safe atmospheric contamination must be adopted and implemented by an adequate and accurate program of air analysis. Such a program varies in scope with many factors, and the planning here is not a job for a novice. In either or both of these situations a program of medical supervision, tailored to the nature of the hygienic problem, is required. The medical job may be easy and inexpensive, thus making few demands on skill and ingenuity, or it may be quite difficult, elaborate, and costly, requiring much skill and knowledge bought only at the price of practical experience.

Chain of Control

Protection begins at the point at which a solvent is manufactured, goes along with the product until it reaches the point or points at which it is to be used, and attends the operations in which it is used. The chain of hygienic control, in the form of information, instructions to personnel, warning labels, environmental appraisal and control, and medical supervision, each to the extent that is needed, is the responsibility of the medical and hygienic personnel of the industrial organization, and to the extent that these are capable, honest, and armed with appropriate authority, they do their job well or badly.

This in brief is the solvent problem. There is nothing mysterious about it, nothing that will not yield readily to the conventional methods of toxicologic and environmental investigation. Its solution is equally lacking in imponderable difficulties, requiring only the application of the disciplines of preventive medicine and engineering in the field of industrial health. In short, the entire solution is one of recognizing that there is a problem, of having a sincere desire to solve it, and a willingness to implement that desire by methods provided by present professional experience.

• • **Photography in Great Britain**—"One of the best things that the British Standards Institution has done recently is the introduction of a standard of projection lenses," an article in *British Kinematography*, January, declares. "British lenses are sold all over the world, and if manufactured in accordance with the agreed standard will fit perfectly into any modern projector."

Mentioning the advantages of international standardization at the discussion meeting of the British Kinematograph Society at which the above statement was made, one of the speakers remarked, "We must remember that the advantages in having a common standard often justify the adoption of a British standard which might be a little different from that which we might establish ourselves."

International Note

It is interesting to note what seems a very friendly gesture, and a contribution to international standardization besides. This is the unbending of the keeper of the British Standards Institution's spelling book to spell his former "standardisation" with a "z." There's hope for "civilisation" yet.

Standards From Other Countries

MEMBERS of the American Standards Association may borrow from the ASA Library copies of any of the following standards recently received from other countries. Orders may also be sent to the country of origin through the ASA office. The titles of the standards are given here in English, but the documents themselves are in the language of the country from which they were received.

For the convenience of our readers, the standards are listed under their general UDC classifications.

05 Periodicals and Reviews

Spain

Layouts for Reviews of A4 Size, UNE 1006

001.8 General Methodology

Spain

Rules for Giving References in the Texts, UNE 1003

332.1 Banking

France

Form for Listing Coupons, NF K 12-70; K 12-71

362.11 Hospitals, Infirmaries

Poland

Various Hospital Forms for Recording Medical Cases, PN Z 09014; 09032; 09047/8; 09051; 09053; 09057; 09059; 09065; 09066; 09068

Hospital Furniture Such as Baby Crib, Taboret, Bed-Tables, etc, PN Z 78004; 78013; 78019/20/21

Hospital Forms and Registers, PN Z 09015; 09038/9

Hospital Bed Table, PN Z 78018

547 Organic Chemistry

Poland

Aniline, Industrial, PN C 97005

Rumania

Butanol, STAS 903

Industrial Acetic Acid, STAS 919

614.84 Fire Brigade

Hungary

Signs Indicating Fire Hydrant, MNOSZ 1042

Small Gasoline Motor Pump, MNOSZ 1060

Rumania

Underground Fire Hydrants, STAS 695; 696

Portable Hydrant, STAS 698

Couplings for Fire Hoses, STAS 701 through 704

Spanner Wrenches for Hose Couplings, STAS 706

Hose Couplings, STAS 705

615 Pharmacy. Therapeutics

Hungary

Hospital Equipment. Various Textile Pieces Used in Hospitals, MNOSZ 844; 4072; 4101-4105; 4108/9; 4111-4114; 4120; 4124; 4126; 4129; 4130; 4133; 4138; 4140; 4142; 4201/2; 4208; 4211

Poland

Special Chisels, PN Z 54012; 54031

Dentist's Plaster Mixing Bowl, PN Z 56009

Various Stomatological Instruments, PN Z 56080; 56138; 56200/1/2; 56205

Handles for Oculist's and Urologist's Instruments, PN Z 57522

Surgical Gouge, PN Z 54011

Surgical Bone Saws, Blade and Frame of, PN Z 54012/3

Gouge for Vertebra, PN Z 54024

Handle (Semi-Finished) for Various Surgical Instruments, PN Z 54028

Farabeuf Raspatory, Straight and Curved, PN Z 54029/30

Finger Rings of Surgical Scissors and Similar Instruments, PN Z 54061

Farabeuf Raspatory Straight and Curved, Narrow Type, PN Z 54064/5

Grucy's Articulation Excavator, PN Z 54070

Scoop for Hip-Joint Operation, PN Z 54071

Stomatological Instruments for Working on Rubber, PN Z 56203/4

Two Forms of Handles for Stomatological Instruments, PN Z 56210/11

Desmares' Eyelid Lifter, PN Z 57519

621.1 Steam. Steam Engines. Boilers

Germany

Attachment Flanges for Water-Level Indicator for Boilers, DIN 3501

Rumania

Adjustable Stay Bolts for Locomotive Fire Box, STAS 659

Spain

Calculation of Stay Bolts of Steam Engine Boilers, UNE 25011

United Kingdom

Cold Drawn Seamless Mild Steel Boiler and Superheater Tubes, BS 494:1950

Hot Finished Seamless Mild Steel Boiler and Superheater Tubes, BS 512:1950

Seamless Half-Per-Cent Molybdenum Steel Boiler and Superheater Tubes, BS 1652:1950

Seamless Chromium-Molybdenum Steel Boiler and Superheater Tubes, BS 1653:1950

Electrically Welded Mild Steel Boiler and Superheater Tubes, BS 1654:1950

621.3 Electrical Engineering

Argentina

Electricity Meters for a-c, IRAM 2016

Electric Indicating Instruments, IRAM 2023

Controllers, Starters and Rheostats, IRAM 2034

Sphere Spark-Gap Tester, IRAM 2038

Steel Sheets for Electromagnetic Circuits, IRAM 2043

Electric Hot Plates, IRAM 2049

Reactive Factor Meters, IRAM 2060

Dielectric Testing by Impulse Voltage, IRAM 2069

Belgium

Rules Relative to Insulating Compound for Cable Boxes for Voltage up to 15000v (4th Edition), NBN 25

Insulating Pipes and Joints for Electric Lines (3rd Edition), NBN 45

Electric Hot Plates (2nd Edition), NBN 162

Electric Irons (2nd Edition), NBN 173

Protection of Electric Machines, Transformers and Apparatus, NBN 197

Static Condensers for Industrial Frequencies, NBN 201

Radio Receivers, NBN 206

Resistance Welding, Brazing and Riveting Machines, NBN 213

France

Connecting Plug for Railroad Heating Line for Nominal Voltages up to 3000 v and Storage Receptacles for it When Not in Use, NF F 13 005 and 006

Germany

Amount of Adjustment of Transmission Belt Tension for Different Electric Machines, DIN 42923

Notes on Steel Wire for Power Overhead Lines, DIN 57295

Rules for Testing Insulating Varnishes, DIN 57360

Binding Posts of Measuring Instruments, DIN 43806

Rules for Valuation and Testing of Starters and Similar Apparatus, DIN 57650

Rules for Valuation and Testing of Regulators, Rheostats, etc, Apparatus, DIN 57655

Knobs, High Type, DIN 41592

Insulating Material, Presspan, DIN 40660

Classification of Ceramic Material Used in Electrical Engineering, DIN 40685

Specification of Materials Used in Building Transformers from 12500 to 40000 kva and up to 120 kv, DIN 42521

Voltage Regulating Commutator for Transformers up to 30 kv and 60 amp, DIN 42564

Different Types of Terminals, DIN 46270; 46271; 46272

D-Type Cut-Out Fuses, Series R2, With Rear Connection, DIN 49313

D-Type Cut-Out Fuses, Series R1¼ and R2, Front Connections, DIN 49322; 49323

Gages for D-Type Fuses, DIN 49366, B1.2

List of Rules and Regulations Published by VDE, DIN 57000

Rules for Testing Marble, Slate and Similar Minerals for Insulating Property, DIN 57330

Rules for Testing Insulating Tape, DIN 57340

Rules for Evaluation and Testing of Insulating Compounds, DIN 57351

Varnish-Impregnated Insulating Fabrics and Paper, DIN 57365

Rules for High-Voltage Testing of Electric Machines, Transformers, etc, DIN 57442

Rumania

Mechanical Connectors for Overhead Lines, STAS 414

Screw-Type Fuses 200 v and 500 v Type, STAS 453; 454; 455

Insulated Copper Wire and Cables, STAS 540

Different Suspension Fittings for Overhead Lines, STAS 674 through 679; 681; 682

Reinforced Wooden Poles for Overhead Lines up to 15 kv, STAS 688

Insulators for Lead-In Wires of Transformers, STAS 689

Tips for Test Prongs, STAS 554

Street Lamp Housing, STAS 803

Suspension Ferrules for Insulators, STAS 804; 807

Three-Phase Asynchronous Motors up to 500 v, STAS 881

Insulated Electric Wires for Lighting Circuit in Cars, STAS 1021

Union of South Africa

Manually Operated Air-Brake Switches, SV 101-1948

Portable Electric Immersion Heaters, SV 102-1948

Replacement Type Heating Units, SV 111-1949

Specifications for Tungsten Filament General Service Electric Lamps, SABS 56-1949

United Kingdom

Trailing Cables for Mining Purposes, BS 708:1950

Industrial Capacitors for Connection to Power Frequency Systems, BS 1650, Part 1:1950

621.6 Apparatus for Conveyance and Storage of Gases and Liquids. Conduits and Pumps

Argentina

Steel Cylinders for Liquefied Gases, IRAM 2525

Germany

Cast Steel Pipe Fittings: Tees and 90° Elbows DIN 2842/3/4 and 2852/3/4

Poland

Pipe Flanges, PN H 74306; 74102; 74315

Rumania

Duplex Pump, Type T, Used in Oil Mining, STAS 537

Seamless Pipes, STAS 824

Wrought Iron Pipe Fittings, STAS 838

Seamless Steel Pipes for Ordinary Use, STAS 441; 442

Malleable Iron Pipe Fittings. Classification, STAS 471

Malleable Iron Pipe Elbows, STAS 474

United Kingdom

Underground Fire Hydrants and Dimensions of Surface Box Openings, BS 750:1950

Flanged Steel Plug Valves for the Petroleum Industry, BS 1570:1949

Steel Butt-Welding Fittings for the Petroleum Industry, BS 1640:1950

621.7 Workshop Practice

Argentina

Oxy-Acetylene Welding. Nomenclature, IRAM 546

Poland

Foundry Patterns. Dimensioning, PN H 55207

Precision Flat Plate, PN M 53101/2; 53104

Round and Oblong Tin Boxes for Food Preserves, PN M 79005; 79007

Rumania

Standard "Draft" for Patterns, STAS 781

Spain

Method of Folding Drawings for Filing Them in A4 Folders, UNE 1027

Uruguay

Method of Dimensioning on Drawings, UNIT 70

Rules for Fixing Limits, UNIT 69

625.7/.8 Roads

Rumania

Ordinary Macadam, STAS 179

Different Types of Pavements, STAS 223; 225

Quarry Stones for Road Building, STAS 667

Road Bitumen, STAS 460

Road Building. Surfacing Aggregates, STAS 539

Road Building. Ingredients for Asphalt-Cement, STAS 174; 175; 729

Road Surfacing, STAS 599

Stones and Natural Ballasts, STAS 666

651.2 Office Furniture

Rumania

Wooden Office Furniture, STAS 770

655 Printing. Publishing. Book Trade

Rumania

Sizes of Printed Text, STAS 885

659.1 Publicity. Advertising. Propaganda

Spain

Standard Sizes of Bills or Posters, UNE 1018

Standard Sizes of Billboards and its Frames, UNE 1025

661 Chemical Products in the Narrower Sense

India

Specifications for Calcium Sulphate for Paint, IS:69

Specifications for Cuprous Oxide for Paint, IS:70

Specifications for Mercuric Oxide for Paint, IS:71

Rumania

Industrial Litharge, STAS 851

Potassium Chlorate, STAS 902

Butyl Acetate, STAS 904

Sodium Hypochlorite, STAS 918

Concentrate of Zinc. Classification and Technical Specifications, STAS 647

Union of South Africa

Solvent Ether, SABS 84-1949

Specifications for Zinc Oxide for Paints, SABS 89-1949

Specifications for Anesthetic Ether, SABS 83-1949

665 Oils. Fats. Waxes

Argentina

Vegetable Oils. Definitions, IRAM 5501

Rumania

Sunflower Oil, STAS 726

Determination of Chemical Composition of Petroleum Products With "Podbielniak Model L" Apparatus, STAS 422

Turbine Oils, Industrial Oils, Refined Oils, STAS 742 through 744

Refined Oils, STAS 898; 899

Residual Paraffin Wax, STAS 721

Transformer Oils, Special Grades T-10 0003 and T-10 004, STAS 753

Transformer Oil Grades Tr-2004 and Tr-2005, STAS 811

Pharmaceutical Vaseline, Natural and Artificial, STAS 886; 887

Industrial Vaseline, Artificial, STAS 917

Refined Mineral Oils, Different Grades, STAS 751

Bitumen for Road Building and Industrial Purposes, STAS 754; 755

Special Paraffinous Combustibles, STAS 722

United Kingdom

Methods of Analysis of Oils and Fats, BS 684:1950

Technical Compound Cod Oil, BS 1582:1950

Cod Oil for Sulphonation, BS 868:1950

Uruguay

Linseed Oil, Refined, and Bleached, UNIT 67-50

666 Glass and Ceramic Industry. Artificial Stone

France

Metal-Reinforced Rings for Stoppers, NF B 31 015

India

Refractories for Railways, Tentative Recommendations, IS:194

Rumania

Refractory Products. Determination of Constant Volume, STAS 127

Refractory Products. Thermic Shock Test, STAS 129

Roofing Tiles, STAS 514, 515

Glass. Test for Water, Acid and Alkali STAS 598

Refractory Products. Temperature Resistance Tests, STAS 128

Glass. Determination of Specific Gravity and of Coefficient of Thermal Expansion, STAS 319, 320

Physical, Mechanical and Chemical Testing of China and Chinaware, STAS 708, 709

Trass Cement, STAS 648

Cone Hip Tiles, STAS 513

Glass. Classification from Chemical Stability Viewpoint, STAS 817

Industrial Porcelain, STAS 815

Ceramic Raw Materials, STAS 852

Union of South Africa

Methods of Testing Refractory Materials, SABS 016-1949

Specification for Fireclay and Silica Refractories, SABS 35-1949

667.6/.8 Paints. Varnishes. Lacquer. Polishing Materials

Argentina

Lamp Black Pigment, IRAM 1021

Method of Comparative Test of Color Dry Pigments, IRAM 1030

Carbon-Black Pigment, IRAM 1057

Dryers, IRAM 1067

Wood Resin Ester, IRAM 1073

Method of Test for Oil Absorption of Pigments, IRAM 1075

Method of Test of Distillation of Lacquer Solvents, IRAM 1098

France

Paints. Terminology, NF T 30 001, Supplement 2

Poland

Housepainter's Tools and Brushes, PN I 61002; 61006; 61009; 61011-61015

Spain

Standard Test for Distillation of Organic Solvents, UNE 7011

668 Various Organic Chemical Industries

Rumania

Household Soap, STAS 189

Animal Glue, STAS 88

669 Metallurgy

Argentina

Chemical Analysis of Ferrosilicon, IRAM 589

Belgium

Various Mechanical Testing Methods of Metals, NBN 117

France

Chemical Analysis of Lead, NF A 06 552

Chemical Analysis of Antifriction Metals of Tin- and Lead-Base Alloys, NF A 06 691

Hot-Rolled Steel Bars for Reinforced Concrete, NF A 35 008

Bulb Strips, NF A 45 041

Hot-Rolled Bars of Different Profile Used in Steel Drum Manufacture, NF A 45 550; 552 through 556

Rumania

Cast Iron, Malleable Iron. General, STAS 568; 569
Lead for Storage Batteries, STAS 663
Carbon Steel Plates and Bands, STAS 505
Copper, Refined, STAS 643
Grey Iron Castings. Terminology, Classification. Defects, STAS 782
Comparative Table of Hardness Number, STAS 883
Pig Iron, STAS 882

674 Wood Industry

Belgium

Cubature of Wood Logs, NBN 210
Cubature of Sawed Lumber, NBN 219

Rumania

Wooden Door Frames, STAS 468
Fireproofing of Wood, STAS 652

677 Textile Industry

Germany

Fibrous Materials. Classification, Definition, Symbols, DIN 61000
Flags, Materials for and Dimensions, DIN 61000
List of Abbreviations for Various Fibrous Materials, DIN 60002

Hungary

Flax, Hemp and Jute Fiber. Tensile Strength, MNOSZ 3203

India

Method for the Estimation of Moisture, Total Size, Starch, Ash and Wax Content in Grey and Bleached Cotton Textile Materials, IS:199
Method for Determination of Copper Numbers of Cotton Textile Materials, IS:200
Method of Analysis of and Tolerances for Water for Textile Purposes, IS:201

Rumania

Rayon Threads, STAS 163
Cotton, Wool and Rayon Socks and Stockings. Specifications, STAS 710, 711, 712
Cotton and Woolen Yarn. Rules for Acceptance and Testing, STAS 713, 714
Pickers, STAS 724, 725
Textiles on "Turkana" Wool Base, STAS 277
Turkana Wool Yarn, STAS 306
Wool, Raw, Not Washed, STAS 844
Textiles for Working Cloth, STAS 271

United Kingdom

Woven Cotton Tapes, BS 1624-26:1950

729 Architectural Details. Decorations and Fittings

Rumania

Various Types of Windows and Doors for Rural and City Dwellings, STAS 461 through 467

Trade Fair

(*Continued from page* 259)

that he found the outlook discouraging for sale of his products in the United States. He is permitted to allot 40 percent of his production for export. For domestic use he makes his motors according to DIN standards. For export he will produce to any standards called for, although this increases his cost of production. Most of his export trade at present is with countries that use British Standards. His experience at the Fair has convinced him that he should concentrate on this trade and not further complicate his problem by attempting to develop a U. S. market.

Commenting on the purpose of the Fair, William Noorlag, Jr, writing in the Chicago *Journal of Commerce*, comments: "This is a direct response to the repeated admonitions of American businessmen to foreign exporters—'If you want to earn dollars, come and show us your goods—get out and sell.'

"The more these countries are able to sell us through new contacts made at the trade fair the more they will be able to buy in this market," he comments. "The more we buy abroad the greater becomes their dollar purchasing power. In turn, the greater the purchasing power the better the standard of living becomes. Once that objective is achieved there will be no ceiling on the amount of goods America will be sending abroad."

Symbols for the Chemical and Petroleum Industries

Lists of symbols used by contractors, designers, and others in the chemical and petroleum industries are being received daily by the American Standards Association, the American Petroleum Institute, and the American Institute of Chemical Engineers. The lists show what symbols are being used on process and engineering flow charts and for general drafting room work. They are in response to an appeal for information to determine whether or not there is need for development of a standard. Work on standard symbols is handled by the Sectional Committee on Abbreviations and Graphical Symbols for Use on Drawings, Z32, under the sponsorship of the American Society of Mechanical Engineers and the American Institute of Electrical Engineers. ASME and AIEE will work with API and AICHE to decide how chemical symbols should be handled.

Book Reviews

Handbook of Supersonic Aerodynamics. Navord Report 1488 (Vol. I) 1950 edition. A Bureau of Ordnance Publication. For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. $1.75.

Work was first begun on this project by interested organizations meeting in a Symposium on Aerodynamics held at the Applied Physics Laboratory of the Johns Hopkins University during December, 1945. Monthly supplements and a 1949 edition have preceded the present volume, which is now being printed and distributed by the Bureau of Ordnance, Department of the Navy. The Applied Physics Laboratory has maintained editorial responsibility and provides a Reviewing Committee at the Laboratory, as before.

Material has been selected for the Handbook on the basis of its expected usefulness to designers of supersonic vehicles. With such work still at a pioneering level the preface states that specific sections of the Handbook will probably require revision from time to time. The 1950 edition of the Handbook is to be published in separate volumes. Volume I contains revisions of sections 1 and 3 of the 1949 edition, while sections 2 and 4 remain unchanged. Further revised material is planned for Volume II. As before, classified material will be published in separate classified volumes. All volumes of the Handbook are loose-leaf in form to permit addition of supplementary material.

The American Standard Letter Symbols for Aeronautical Sciences, approved by ASA on January 24, 1950, comprises the first section of Volume I. Beginning with the next volume, all symbols used in the Handbook will be brought into conformity with the American Standard.

The other three sections of the present volume cover: Fundamental Equations and Formulae; General Atmospheric Data; and, The Mechanics and Thermodynamics of Steady One-Dimensional Gas Flow.

Colorimetry. By Deane B. Judd. (National Bureau of Standards Circular 478. Available from U. S. Government Printing Office, Washington 25, D. C. 30 cents.)

Scientists and technicians concerned with color measurement will find helpful information in this new booklet.

Colorimetry is of vital importance in modern mass-production methods, the NBS points out. Only through the use of a grading system based on determination of color can the textile manufacturer produce goods of uniform color at a price low enough to sell. Likewise, the assembly of a complicated machine like a refrigerator often requires a color specification for each of several parts. The booklet describes the standards and measurement methods developed by the Bureau, giving the basis for each technique and showing clearly how one method supplements the other. Chapters cover: the standard observer; illuminants and coordinate system; small-difference colorimetry; material standards of color; one-dimensional color scales; and general methods.

AMERICAN STANDARDS

Status as of September 8, 1950

Legend

Standards Council—Approval by Standards Council is final approval as American Standard; usually requires 4 weeks

Board of Review—Acts for Standards Council, gives final approval as American Standard; usually requires 2 weeks

Correlating Committees—Approve standards to send to Standards Council or Board of Review for final action; approval by correlating committee usually takes 4 weeks

Building

Submitted to ASA for Approval—

Pile Foundations and Pile Structures, A96
Sponsor: American Society of Civil Engineers

In Correlating Committee—

Proposed American Standard Specifications for Gypsum Plastering, A42.1 (Revision of A42.1-1946)
Proposed American Standard Specifications for Interior Lathing and Furring, A42.4 (Revision of A42.1-1946)
Sponsor: American Institute of Architects
American Society for Testing Materials

American Standards Withdrawn—

Specifications for Structural Wood Joist and Plank, Beams, and Stringers, and Posts and Timbers (ASTM D 245-37; ASA 07-1939)
Sponsor: American Society for Testing Materials

Withdrawal Requested—

Design for Joint Plates for Seven Inch Girder-Grooved and Guard Rails, E2-1923
Design for Joint Plates for Nine-Inch Girder-Grooved and Guard Rails, E3-1923
Design for Seven-Inch Girder-Grooved Rail, E4-1933
Design for Nine-Inch Girder-Grooved Rail, E5-1933
Design for Seven-Inch Girder Guard Rail, E6-1933
Design for Nine-Inch Girder Guard Rail, E7-1933
7-Inch 82 lb. Plain Girder Rail and Splice Bars for Use in Paved Streets, E8-1933
7-Inch 92 lb. Plain Girder Rail and Splice Bars for Use in Paved Streets, E9-1933
7-Inch 102 lb. Plain Girder Rail and Splice Bars for Use in Paved Streets, E11-1933
Sponsor: American Transit Association

Consumer

In Correlating Committee—

Colorfastness to Light (AATCC 16-45) L14.53
Colorfastness of Acetate Rayons to Atmospheric Fumes (AATCC 23-46) L14.54
Resistance of Textiles to Mildew and Rot, and Evaluation of Textile Fungicides (AATCC 30-46) L14.55
Colorfastness to Perspiration (AATCC 15-45) L14.56
Colorfastness to Chlorine Bleaching (AATCC 3-42) L14.57
Colorfastness to Peroxide Bleaching (AATCC 29-45) L14.58
Water Resistance of Fabrics—Resistance to Hydrostatic Pressure (AATCC 18-41) L14.59
Resistance to Water Spray (AATCC 22-41) L14.60
Resistance to Absorption of Water During Immersion (AATCC 21-41) L14.61
Detection of Phototropism (AATCC 32-46) L14.62
Colorfastness to Pleating (AATCC 31-46) L14.63
Resistance of Textile Fabrics and Yarns to Insect Pests (AATCC 24-49) L14.64
Evaluation of Insect Pest Deterrents on Textiles (AATCC 28-49) L14.65
Specifications for Textile Testing Machines (ASTM D 76-49) L14.66
Methods of Testing and Tolerances for Knit Goods (ASTM D 231-46) L14.67
Definitions of Terms Relating to Textile Materials, L14.12 (Revision of ASTM D 123-48; ASA L14.12-1949)
Methods of Testing and Tolerances for Cotton Yarns, L14.13, (Revision of ASTM D 180-47T; ASA L14.13-1949)
Methods of Test for Asbestos Yarns, L14.18 (Revision of ASTM D 299-48T; ASA L14.18-1949)
General Methods of Testing Cotton Fibers, L14.23 (Revision of ASTM D 414-47T; ASA L14.23-1949)
Method of Test for Fiber Length of Wool, L14.32 (Revision of ASTM D 519-40; ASA L14.32-1949)
Methods of Testing and Tolerances for Single Jute Yarn, L14.34 (Revision of ASTM D 541-41; ASA L14.34-1949)
Methods of Testing and Tolerances for Glass Yarn, L14.36 (Revision of ASTM D 578-47T; ASA L14.36-1949)
Methods of Testing and Tolerances for Woven Glass Fabrics, L14.37 (Revision of ASTM D 579-47; ASA L14.37-1949)
Methods of Testing and Tolerances for Woven Glass Tapes, L14.38 (Revision of ASTM D 580-47; ASA L14.38-1949)
Methods of Testing and Tolerances for Woven Glass Tubular Sleeving and Braids, L14.39 (Revision of ASTM D 581-44; ASA L14.39-1949)
Methods of Testing Felt, L14.52 (Revision of ASTM D 461-47; ASA L14.52-1949)
General Methods of Testing Woven Textile Fabrics, L14.68 (Revision of ASTM D 39-39; ASA L5-1939)
Sponsors: American Society for Testing Materials; American Association of Textile Chemists and Colorists

New Project Requested—

Beverage Makers, Pressure Cookers and Canners
Requested by: American Home Economics Association

Drawing Room Practice

In Standards Council—

Abbreviations for Use on Drawings, Z32.13 (Revision of Z32.13-1946)
Sponsors: American Institute of Electrical Engineers; American Society of Mechanical Engineers

Electrical

American Standard Just Published—

Household Electric Ranges, C71.1-1950 $.90
Sponsor: National Electrical Manufacturers Association

In Correlating Committee—

Proposed Addition to American Standard for Attachment Plugs and Receptacles C73-1941—Grounding-Type Attachment Plug Caps and Receptacles, C73
Sponsor: National Electrical Manufacturers Association

Submitted to ASA for Approval—

Sampling Electrical Insulating Oils, Method of Test (ASTM D 923-49; ASA C59.21)
Power Factor and Dielectric Constant of Electrical Insulating Oils of Petroleum Origin, Method of Test (ASTM D 924-49; ASA C59.22)
Gas Content of Insulating Oils, Method of Test (ASTM D 831-48; ASA C59.23)
Inorganic Chlorides and Sulfates in Insulating Oils, Method of Test (ASTM D878-49; ASA C59.24)
Detection of Free Sulfur in Electrical Insulating Oils, Method of Test (ASTM D 981-48 T; ASA C59.25)
Natural Block Mica and Mica Films Suitable for Use in Fixed Mica-Dielectric Capacitors, Specification for (ASTM D 748-49; ASA C59.26)
NEMA Standards for Laminated Thermosetting Products (Revision of C59.16-1949)
Method of Testing Sheet and Plate Materials Used in Electrical Insulation (Revision of ASTM D 229-46; ASA C59.13-1948)
Sponsor: American Society for Testing Materials
Test Code for Apparatus Measurement, Z24.7

New Project Requested—

Electronic Abbreviations
Requested by: Institute of Radio Engineers

Gas-Burning Appliances

In Correlating Committee—

Approval Requirements for Gas Water Heaters (Revision of Z21.10-1949)
Addenda to Approval Requirements for Gas-Fired Room Heaters (Revision of Z21.11-1949)
Approval Requirements for Installation of Gas Equipment in Large Boilers (Revision of Z21.33-1922)
Addenda to Approval Requirements for Central Heating Gas Appliances (Revision of Z21.13-1945)
Installation of Gas Piping and Gas Appliances in Buildings, Z21.30 (Revision of K2-1927 and Z27-1933)
Sponsor: American Gas Association

Highway Traffic

In Correlating Committee—

Specifications for Traffic-Actuated, Traffic Signal Controllers and Detectors, D13.1
Sponsor: Institute of Traffic Engineers

Mechanical

American Standards Just Published—

Single Point Tools and Tool Posts, B5.22-1950 $1.25
Sponsors: American Society of Mechanical Engineers; Metal Cutting Tool Institute; National Machine Tool Builders' Association; Society of Automotive Engineers

American Standards Approved—

Large Rivets (½ Inch Nominal Diameter and Larger), B18.4-1950, (Revision of B18.4-1937)
Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

Compressed Gas Cylinders Valve Outlet and Inlet Connections, B57.1-1950, (Revision of B57.1-1949)
Sponsor: Compressed Gas Association, Inc

In Correlating Committee—

Recommended Practice for Mechanical Refrigeration Installations on Shipboard, B59
Method of Rating and Testing Refrigerant Expansion Valves, B60
Sponsor: American Society of Refrigerating Engineers
Gear Nomenclature, B6
Sponsors: American Gear Manufacturers Association; American Society of Mechanical Engineers

Motion Pictures

In Correlating Committee—

Cutting and Perforating Dimensions for 32-Mm Sound Motion Picture Negative and Positive Raw Stock, Z22.71
Cutting and Perforating Dimensions for 32-Mm Silent Motion Picture Negative and Positive Raw Stock, Z22.72
Sound Records and Scanning Area of 35-Mm Sound Motion Picture Prints, Z22.40
Sponsor: Society of Motion Picture and Television Engineers

Photography

In Correlating Committee—

Methods of Testing for Photographic Enlargers, Z38.7.6
Sponsor: Optical Society of America

Petroleum

(*Continued from page* 257)

further, I find that one steel company now lists only 59 sizes, weights, and grades.

Savings have been made all along the line by this simplification.

Shipping containers, of course, are a major item in the petroleum business and here, too, there is current activity toward both simplification and standardization. Sometime ago when we were mechanizing our barrel-handling equipment at the refineries we discovered the decided lack of standard sizes in our own industry. In fact, one manufacturer with two plants on the Pacific Coast was making a different size 55-gallon single trip-per barrel in each of his plants.

Fortunately, the Steel Shipping Container Institute is cooperating with the National Bureau of Standards which, in turn, is dealing with all consuming industries in an attempt not only to standardize but simplify specifications in this industry. When this is accomplished, both the manufacturer and the consumer will cash in on savings.

Purchasing has a large stake in standardization and simplification, and the years ahead of us will determine whether or not we are capable of moving forward in this important phase of purchasing. Purchasing agents should take the lead in this essential movement.

German Consul

(*Continued from page* 259)

burning out due to the use of 220 volts in Germany instead of the 110 volts for which the machine was designed, no satisfactory method has yet been found to overcome the difference in speed caused by the use of 50 cycles in Europe in place of the 60 cycles in this country. As the result of this difference in speed, the effect of the records was ruined. Agreement on standards helps to break down such trade barriers and opens a world-wide market, he pointed out.

This, however, is not the only value of standardization, in Dr Krekeler's opinion. The best protection to democracy is to raise the standard of living in those places throughout the world where it is now unsatisfactory, he said. "To this end, I would foster the closest cooperation among the national standards associations," he said. "In the present world situation, the standardization technique of cooperation and compromise should receive special attention as one effective example of the methods followed by democracy in action."

Dr Krekeler is a scientist who is well acquainted with technical standards. His method of determination of sulfur in petroleum products has been adopted as a standard in several European countries.

Thin Metals

(*Continued from page* 261)

on which the present standard is based. The expansion of this series will mean that practically all of the Manufacturers' Standard Gauge sizes will be within a few thousandths of an inch of one of the preferred number thicknesses. This should make it easier to make the changeover as far as many of the steel items are concerned. The American Wire Gauge sizes are also within a very few thousandths of the preferred number sizes so that it should not be difficult to make the changeover on most of the nonferrous metals. With this change it is hoped that it will be possible to bring the "ASA" preferred number series into wide use in the automobile industry. Since this industry is one of the largest users of sheet steel this should make the problem of a changeover in the steel industry much simpler.

On page 260 is a table showing the 40 series of preferred numbers in inches which it is proposed to use for all thin flat metals. The comments of industry on this proposed standard are desired. It would be appreciated if any comments would be sent to American Society of Mechanical Engineers, 29 W. 39 Street, New York 18, New York, or to I. V. Williams, Bell Telephone Laboratories, Inc, Murray Hill, New Jersey.

From the Land Standardization Service News *(Published by Standardization [Defence], Ministry of Supply, London, England), April 1950.*

Following the visit to Canada of an U. K. delegation to discuss questions relating to export of electrical equipment from this country to Canada, meetings were held in Toronto and agreement has been reached in principle. The main outcome is that the British Standards Institution will act as the agent for the Canadian Standards Association and will conduct all the preliminary work of testing equipment in this country before final approval is granted at the CSA headquarters in Toronto.

What's New on American Standard Projects

Acoustical Measurements and Terminology, Z24

Sponsor: Acoustical Society of America

Under its reorganization plan, effective June 20, this committee's work has been divided into two types of projects—writing and exploratory. Writing project groups are set up for a maximum period of three years to draft proposed standards in a specific field. If at the end of that time they have not produced an American Standard, the sectional committee will decide whether they shall be disbanded, reorganized, or permitted to continue. The exploratory project groups are established for a period of one year to determine whether or not it is feasible to prepare standards suggested by the sectional committee chairman with the aid of the sectional committee.

The writing projects already set up are:

Test Code for Apparatus Noise Measurement
Octave Band Filter Sets
Narrow Band Frequency Analyzers
Secondary Calibration of Microphones
Acoustical Terminology
Noise Measurement Specifications for Audiometers
Screening Audiometer Specifications
Speech Audiometer Specifications
Hearing Aid Test Code

The exploratory projects cover:

Sound Level Meters
Desirable Noise Levels
Subjective Tests for Communication Systems
Measurement of Acoustic Impedance
Measurement of Absorption Coefficients of Acoustical Materials
Measurement of Transmission Loss Through Building Structure
Audiometer Earphones

Projects are also to be established in the field of vibration and shock.

Home Cooking and Baking Utensils, Z61

The American Home Economics Association has asked that standards be developed for beverage makers, pressure cookers, and canners, The AHEA has offered to serve as sponsor for the work. These products fall into the classification of home cooking and baking utensils and, therefore, within the scope of project Z61. After approval of the American Standard Dimensions, Tolerances and Terminology for Home Cooking and Baking Utensils, Z61.1-1949, the General Conference which recommended its acceptance voted that all additional standards for cooking utensils be developed under the sectional committee method. A committee is now being organized. The request for standards covering beverage makers, pressure cookers, and canners will be referred to the committee when it is ready to take up its work.

Color Code for Compressed Gas Cylinders and Pipe Lines

The Interdepartmental Standards Council of the Federal Government has submitted the Color Code for Compressed Gas Cylinders and Pipe Lines, MIL-STD-101, as a basis for an American Standard. This standard has already been approved by the Departments of the Army, Navy, and Air Force, and by the Munitions Board. It became effective for use by the military services on January 1, 1950.

As this standard bears a relation to both the American Standard Code for the Identification of Piping Systems, A13-1928, and the American Standard Method of Marking Compressed Gas Cylinders to Identify Content, Z48.1-1942, a general conference of all groups concerned will be held October 10. The American Standard A13-1928 was developed under the supervision of the Mechanical Standards Committee, while Z48.1-1942 was handled by the Safety Code Correlating Committee.

Abbreviations in Electronics

A request has been received from the Institute of Radio Engineers for a new committee to standardize and coordinate abbreviations within the various branches of the electronics industry. At present sectional committees Z10 and Z32 both have scopes which partially cover this field. The Z10 committee covers "standardization of letter symbols and signs for equations and formulas, and abbreviations for use in publications." The Z32 committee has for its scope "standardization of graphical symbols and abbreviations for use on drawings." As neither committee is under the guidance of a group specifically interested in electronics, and their scopes make it clear that there is no coordination in the standardization of these abbreviations, the Institute of Radio Engineers feels that a separate "Z" committee should be formed.

Safety Code for Construction, Care and Use of Ladders, A14

The National Association of Mutual Casualty Companies has just been approved as co-sponsor for the ASA project on Safety Code for Construction, Care and Use of Ladders. The Association will share the sponsorship with the American Society of Safety Engineers, which up to now has acted as sole sponsor.

Attachment Plugs and Receptacles, C73

Sponsor: National Electrical Manufacturers Association

A revised scope for the Sectional Committee on Attachment Plugs and Receptacles has just been approved. The scope now covers:

> Construction, performance, rating and testing of interchangeable, separable attachment plugs, receptacles and connectors in ratings of 125 and 250 volts, 60 amperes and under, to be employed in commercial, industrial and domestic branch circuits and with tools, equipment and appliances for use on such branch circuits.

The words "of the flat-blade type" in the former statement were deleted because one blade in the proposed supplement to the American Standard for Attachment Plugs and Receptacles, Grounding-Type Attachment Plug Caps and Receptacles, is not of the flat-blade type.

News Briefs

• • **Two new plow bolt designs** are recommended in a new American Standard for plow bolts (ASA B18.9-1950) recently approved. The standard is intended to reduce the number of plow bolt sizes now in use and to facilitate production and availability of stocks of standard sizes without stocking quantities of special bolts.

Recommended bolts are the No. 3 square neck, 80-deg round countersunk head, and the No. 7 reverse key, 60-deg round countersunk head plow bolts. Standards for No. 3 square neck, countersunk repair head; No. 4 countersunk, square repair head; No. 6 heavy key, round countersunk repair head; and No. 7 reverse key, round countersunk repair head for service purposes are included.

Specifications for nine sizes of No. 3 square neck, 80-deg round countersunk head plow bolts from $\frac{5}{16}$ to 1 inch diameter, and for seven sizes of No. 7 reverse key, 60-deg round countersunk head plow bolts from $\frac{5}{16}$ to $\frac{3}{4}$ inch diameter are tabulated. For the convenience of designers the new standard gives features of the new head designs to be considered in their utilization.

Sponsors are the American Society of Mechanical Engineers and the Society of Automotive Engineers.

Copies of American Standard B18.9-1950 are available at 55 cents per copy from the American Standards Association.

• • **Walter S. Paine**—A fellowship has been established at New York University as a memorial for Walter S. Paine, for many years manager of the engineering and inspection department of the Aetna Life Affiliated Companies. Announcement of the fellowship was made by the University's Center for Safety Education. Carrying an annual grant of $1,500, it was made possible by the Association of Casualty & Surety Companies. Mr Paine was vice-president for industrial safety of the National Safety Council and served with the engineering and project committee of the Association of Casualty & Surety Companies. For many years he was active in ASA sectional committees working on safety standards, as the chairman of the Safety Code Correlating Committee, and as a member of the Standards Council.

From the Land Standardization Service News *(Published by Standardization (Defense), Ministry of Supply, London, England), April 1950.*

In our January issue reference was made to the Zurich meeting of the International Radio Consultative Committee (CCRI). Among other matters discussed were those concerning international agreement on television standards. Of these perhaps the most far reaching was the question whether or not standards should be agreed upon nationally or on a world-wide basis. This knotty question was left unanswered although, as already recorded, the existing British transmission standard of 405 lines was agreed to by France. Another important question concerned the aspect ratio. The meeting decided to adopt as standard four units horizontally to three units vertically. This conforms to the USA standard and the BBC is understood to be planning to change to the 4:3 ratio in the near future. (The present British standard is 5:4.) The basis of the 4:3 choice was the fact that the aspect ratio of commercial 35 mm and 16 mm films is very close to the 4:3 value.

• • **American Standard Featured**—Advertisements with an unusual twist appeared in four home economics magazines in June. "We Step Out of Our Kitchen to Make News for Forty-two Million Kitchens," the General Foods ad declares. A news item in the ad features 4-H Club girls, who "can soon start their cake-making and cooking projects with new confidence." General Foods Consumer Service has helped to put new and more accurate recipes within their reach, the ad explains. Winners of 4-H club contests are now receiving pans, cups, and spoons which conform to the new American Standard for cooking utensils, the ad declares.

• • **Governors Ask Uniform Laws**—As part of an active program for safer highway transportation, the state governors have called for enactment of uniform motor vehicle laws. The resolution was taken at the governors' annual conference in White Sulphur Springs, West Virginia. The governors are urged to seek appropriate legislative action in 1951. The need for uniform requirements for vehicle sizes and weights was stressed particularly. Adoption by all states of the Uniform Vehicle Code was also urged.

• • **Progress Medal**—Dr Loyd A. Jones, head of Kodak Research Laboratories' physics department, is being awarded the 1950 Progress Medal of the Photographic Society of America, for "outstanding contributions to photographic science and practice" that have "benefited all photographers." In announcing the award, the Society cited Dr Jones for his outstanding contributions "especially in the field of sensitometry, and prominent work in original and productive photography, photometry, colorimetry, motion picture engineering, design of interpreting apparatus, ASA speed rating, and leadership."

As chairman of ASA sectional committee on photography, Z38, Dr Jones has been importantly responsible for the active record of that committee. It has completed American Standards giving dimensions and specifications for photographic film, paper, cameras and camera parts, exposure meters, and photographic chemicals. It has also agreed

upon American Standards stating the principles for determining photographic speed and exposure index, for spectral-sensitivity indexes, and group numbers for photographic emulsions.

• • **Against High Manufacturing Costs**—"Standardization—GM's No. 1 Weapon" is the title of an article in *Steel*, June 12. Theme of the article is the vast improvements in manufacturing efficiency resulting from coordination of technical and engineering knowledge involving materials, processes, equipment and general shop practices of all General Motors' 36 operating divisions.

• • **The "little red school house"** is being standardized! According to a news item in the April 1950 issue of *Heating, Piping and Air Conditioning*, standard elementary classroom wings designed for schools in Montgomery County, Maryland, will provide elementary pupils with modern developments in school construction at a saving to taxpayers through standardization.

According to the item, "these structures are formed of simple steel bent construction, consisting of continuous column beams tied together—two to a classroom. The steel decking welded to these beams becomes the ceiling of each classroom when acoustical tile is cemented directly to the underside. The columns require the only footings for the buildings. The bent construction permits, a continuous run for the windows in the exterior walls as well as in the clerestory wall atop each wing. Windows in the clerestory walls provide ventilation and additional light to the classroom."

• • **Howard Coonley,** industrialist, Chairman of the ASA Executive Committee, and longtime pioneer in standardization work, was awarded an honorary degree as doctor of engineering at the August commencement exercises of Rose Polytechnic Institute in Terre Haute, Indiana. Mr Coonley made the commencement address to the 64 graduating seniors who were receiving bachelor of science degrees in engineering

Rose Polytechnic officials who presented the honorary doctorate to Mr Coonley, cited his international reputation as a leader and pioneer in the field of standardization and interchangeability of manufactured parts. He was also lauded for his active participation in civic, educational, and governmental posts.

In the commencement address, Mr Coonley referred to his interest in standardization techniques: "Standardization is one of the most essential tools of management. I refer to standards that provide for interchangeability, standard designs that make possible mass production and standard specifications without which subcontracting would be impossible."

• • **Canada**—The Committee on Limits and Fits of the Canadian Standards Association has reached agreement on a final draft of Part II of CSA Specification B97, Limits and Fits for Engineering and Manufacturing, including tables of recommended fits between holes and shafts. In announcing this agreement, the *CSA Quarterly Bulletin* wrote:

"No similar standard having been adopted in the United States, the committee hopes that Part II of Specification B97 will serve as a basis for future mutual agreement in this phase of engineering practice."

The reference is to the efforts made in recent years to arrive at American-British-Canadian unification in this field. The first part of an American Standard was published in 1947 as B4.1-1947, Limits and Fits for Engineering and Manufacturing. The development of Part II of the American Standard is still under consideration.

• • **Large Rivets**—A revision of the American Standard for Large Rivets (½ in. Nominal Diameter and Larger) has been approved by ASA.

Like the 1937 edition, the standard contains the dimensions before and after driving, shape, tolerances, finish, and materials for rivets designated as: Button Head, High Button Head (Acorn), Flat-Top Countersunk Head, Round-Top Countersunk Head, Cone Head, and Pan Head. These rivets are furnished ordinarily with straight necks. However, the swell neck included in this standard may be specified for all standard large rivets except the flat-top countersunk and round-top countersunk types.

The major dimensional change in this new edition concerns pan-head rivets. These were revised to conform with the American Bureau of Shipping and the U. S. Navy design.

The revision was prepared by the ASA Sectional Committee on Dimensional Standardization of Bolts, Nuts, Rivets, Screws, and Similar Fasteners under the sponsorship of the American Society of Mechanical Engineers and the Society of Automotive Engineers.

• • **International Rubber Committee**—The third meeting of ISO/TC 45 on Rubber will be held in the Hotel Mayflower, Akron, Ohio, October 16 to 20, the week following the International Rubber Conference in Cleveland. Ten sessions are scheduled, plus field trips to rubber plants in the neighborhood as guests of the rubber manufacturers. Subjects scheduled for discussion include: testing for hardness, abrasion, tension stress strain, tear strength, and ply adhesion; ageing; grading of raw rubber; latex; flex cracking; rubber-to-metal bonding; dynamic tests; and classification of vulcanized rubber by physical properties. Plans for the long-term program of the committee will also be discussed.

Dr H. M. Glass, Assistant Technical Director of the British Standards Institution, in charge of work on chemicals, metals, and nonmetallic materials, will attend the meeting. The BSI holds the secretariat for this committee. Dr Glass will be assisted by H. M. Lawrence, Materials Engineer, ASA staff. Representatives from a number of countries that are members of the committee will attend the meeting.

The Waldorf-Astoria

NEW YORK CITY

For details of the National Standardization Conference program, see page 267.